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ABSTRACT

These 2 volumes include papers and abstracts of papers presented at the August 2002 "The Way We Think" conference in Denmark. Papers and abstracts of papers in the two volumes include: "Blending and Conceptual Disintegration" (Anders Hougaard); "Levels of Blending, Disintegration, and Language Evolution" (Carl Bache); "Conceptual Integration, Categorization, Metaphor, and Idiomaticity in he New European Monetary Union (the Euro)" (Carmen Ma Bretones Callejas); "Blending into the Background: Children's Symbolic Play, Props, and Staging in the Material World" (Chris Sinha); "CYBERSPACE, BLENDED SPACE: Cyberspace as a Conceptual Integration" (Conrad Johansson); "How to Build a Human: Genes, Blends, and Popular Culture" (Craig A. Hamilton); "Material Anchors for Conceptual Blends" (Edwin Hutchins); "Primary Metaphor and the Fantastic" (Elena Tapia); "Analogy: Within Reality; Between Reality and Language; Between Mind and Language; Within Language" (Esa Itkonen); "Conversational Compressions: Conceptual Blending and Virtual Interaction in Phrases" (Esther Pascual); "Conceptual Integration in the Domain of Music" (Finn Holst); "The Syntactic Realization of Conceptual Integration: The Quotative Use of German Modal Verbs" (Geert Brone and Kurt Feyaerts); "Blending and Artistic Creativity" (Gilles Fauconnier); "Fictive Motion, Perception, and Conceptual Integration" (Jesper Egholm); "Gradient Blends: The Art of Discerning and Doing the Appropriate Thing" (Katherine O'Doherty Jensen); "Blending and Moving-Ego and Moving-Time" (Kazuko Shinohara); "From X to Y: The 'Complete Path' Construction in Basque" (Koldo J. Garai and Ibarretxe-Antunano); "Humor through 'Double Grounding': Structural Interaction of Optimality Principles" (Kurt Feyaerts and Geert Brone); "Entrenchment Facilitated Through Iteration in Blended Constructions in Hungarian" (Laszlo I. Komlosi); "The Emotive Function of Poetic Imagery" (Mette Steenberg); "Experimental Evidence in Support of a Cognitive Linguistic Analysis of the Spanish Verbs 'Ser' and 'Estar'" (Monica Gonzalez-Marquez and Michael J. Spivey); "The Man,

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the Key, or the Car: Who or What Is Parked Out Back?" (Morana Alac and Seana Coulson); "[We Can All Get to a Point...] New Media Art and Conceptual Integration" (Morten Sondergaard); "Cognition in Jazz Improvisation" (Ole Kuhl); "Conceptual Integration in Natural Internet Definitions: A Dutch and French Discursive Case Study" (Paul Sambre); "Mental Spaces, Mental Architecture, and an Excellent Mistake" (Per Aage Brandt); "Blending Linguistics and Cognition: A Methodological Critique" (Philip Bell); "Conceptual Integration on a Cultural Timescale: The Evolution of Time-Telling" (Robert F. Williams); "Digging One's Own Grave: Integrating Current Blending Theory and Grammatical Analysis" (Ronald R. Jacobsen); "Creative Collocations and Conceptual Integration" (Sonja Poulsen); "Shorts, Breeches, and Bloomers: Plurality in Blends" (Svitlana A. Zhabotynska); "Thought Experiments, Conceivability Arguments, and Conceptual Blending" (Tim De Mey); and "Compromise in Multi-Agent Blends" (Tony Veale). (VWL)

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The Way We Think: A Research Symposium on Conceptual Integration and the Nature and Origin of Cognitively Modern Human Beings

(Odense, Denmark, August 19-23, 2002)

Volumes I [and] II

Edited by:
Anders Hougaard
Steffen Nordahl Lund

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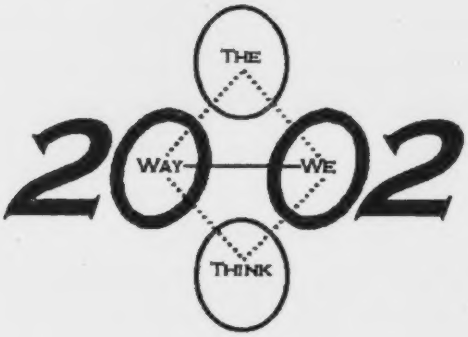
Anders Hougaard &
Steffen Nordahl Lund (eds.)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Preface

The present publication gives a survey of current research in 'conceptual integration' ('blending'), which was introduced into cognitive science in the early 1990's by Gilles Fauconnier and Mark Turner. In the two volumes which comprise this issue are whole papers as well as abstracts for papers which have been submitted to *The Way We Think*. The publication contains written versions of and (extended) abstracts for the papers given at the conference.

The conference is the first of its kind. In the past blending has been dealt with in individual papers and small workshops, and recently in keynote addresses and theme sessions at various larger international conferences (e.g. The International Cognitive Linguistics Conference, 1999 and 2001). *The Way We Think* is the first major international conference focussing on blending, or conceptual integration theory. The motivation for the conference is that blending theory has developed over the last few years into almost a school within a school ('second generation cognitive science'), with practitioners from diverse fields of the humanities and cognitive (neuro-)sciences. The organising committee and the blending community in general think that the time has come for blending theory to be evaluated, explored and challenged at its own major international event, where blending researchers and people with related interests in cognitive science will have the opportunity to meet and discuss.

There is an official website for blending research at:
http://blending.stanford.edu

The editors thank all contributors for their effort and collaboration.

Blending and Conceptual Disintegration

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Extended abstract

"Lars Michaelsen seems to have recovered his legs."
[AH's translation from Danish]
(Said by a commentator during the cycling race classic Paris-Roubaix)

Integration and compression, Fauconnier and Turner (2002) holds, are the marvels of the human mind that we need to understand and describe. At the heart of the conceptual integration research programme, it is stated, is the study of how connections between and within mental spaces are compressed and/or transformed during integration. But integration and compression alone cannot explain, for example, how it is possible for a rider to loose and then recover his legs. In fact there are many blends like the example given above where integration and compression offer only partial accounts of what is going on during the blending process, where the description of the blending process needs to be expanded in certain ways. In yet other cases, there are aspects of the blending process which are not simply overlooked, but which seem to be 'hidden' because of the highlighting by the integration and compression metaphors. This latter type of case is recognised simply as 'partial projection' of structural elements in an input, as a self-given thing during integration. But I suggest that we frame it differently. What is missing in the picture, I propose, is an exploration of the way we single out aspects or parts of structural elements in mental spaces, during blending, for individual manipulation or for the purpose of 'enriching' the conceptualisation of that structural element in one way or the other. I refer to that phenomenon as 'conceptual disintegration' (hereafter just 'disintegration'). Much attention has been paid, in mental space literature, to phenomena which seem related somehow to disintegration, but the latter remains an almost completely overlooked aspect of blending. Disintegration is not just a trivial side product of integration; it is an achievement in itself, and it complements integration and compression in various interesting ways, which deserve serious, separate attention.

In this paper I discuss a selection of examples of what I call disintegration. In each case I attempt to classify the disintegration process according to specific definitions. Among the examples that I will look at

are ‘splitting’ (where one unified structural element in an input appears in the blend as two or more different structural elements; this type of disintegration is found in e.g. split-self constructions (Lakoff 1996) and fictive motion constructions), ‘partitioning selection’ (where aspects or parts of a unified structural element in an input are ‘boxed’ and projected individually).

The process of disintegration is thus a phenomenon which is realised in a number of different ways that all share the property that unified structural elements are divided/split/parted in specific ways. The purpose of this paper is to introduce disintegration into the standard inventory of blending terminology. I discuss disintegration in relation to the constituting and governing principles of blending and attempt to specify its role in the overall picture.

Levels of blending, disintegration and language evolution

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Abstract

This paper proposes a new typology of blending which incorporates the notion of *conceptual disintegration* as an indispensable counterpart to blending ('disintegration' is here used in a special technical sense as the opposite of 'integration'). The new typology – which is meant as a supplement to Fauconnier & Turner's typology of simplex, mirror, single-scope and double-scope networks – comprises three levels of increasing sophistication. It is argued that blending often, if not always, presupposes disintegration and that disintegration in fact serves as a crucial link between the three levels. This model has two advantages. It helps us approach the 'ubiquity problem' of conceptual integration theory (the problem of specifying the descriptive and explanatory power of blending as a ubiquitous phenomenon) in that each level represents a localized hypothesis about blending which can be evaluated and tested individually. Secondly, the typology has certain implications for the evolutionary claims of Fauconnier & Turner's theory. Each level can be viewed as a possible phylogenetic stage in the origin and development of the human language faculty.

1. Introduction

Wouldn't it be nice if we could point to a single pervasive cognitive principle or mechanism accounting for all human thought and mental activities? A 'silver-bullet' theory: something which would explain – in one fell swoop – human perception, cognition, behaviour, culture, and language; a principle which, in addition, would throw light on the evolution of cognitively and behaviourally modern human beings, not to mention the origin of language? Well, yes *and* no! Any theory which provides a convincing coherent rationale for all these phenomena would of course be immensely attractive. On the other hand, for an all-embracing theory to be taken at all seriously, it must offer not only comprehensiveness but also depth, and it must be not only observationally adequate but also descriptively and explanatorily adequate. Scope should not be attained at the expense of true insight or a precise understanding of the subtle nature of specific individual phenomena. Any silver-bullet theory will have difficulty satisfying such a demand.

When one reads the standard literature in conceptual integration theory (such as Turner 1996, Fauconnier & Turner 1996, 1998, 2000, 2002; Coulson & Oakley 2000) one easily gets the impression that blending is a mechanism with silver-bullet qualities. Blending is simple, it is dynamic and powerful, if offers itself to elegant description, it seems to be a central factor in all mental activities, and it is arguably an important governing principle at all levels of human linguistic performance. As Turner says in *The Literary Mind*: "At the most basic levels of perception, of understanding, and of memory, blending is fundamental" (1996: 110). And in Fauconnier & Turner's *The Way We Think*, modern human performances, such as art, religion, science and not least language, which all seem to have arisen as singularities in human evolution, are claimed to be "the common consequence of the human mind's having reached a critical level of blending capacity – namely, double-scope conceptual integration" (2002: 187).

In this paper I want to discuss certain problems in connection with the potency and ubiquity of blending. I take my point of departure in Fauconnier & Turner's own constraints on blending, as presented in *The Way We Think* (2002), then move on to a presentation of a typology of blending in terms of three levels of increasing sophistication. This typology incorporates the notion of conceptual disintegration as a necessary counterpart to blending, thus inviting a greater number of localized hypotheses in relation to blending theory. Finally I want to look at some phylogenetic implications.

The main point of the paper is to show that though conceptual integration is immensely important to an understanding of the human mind, our ability to do the opposite, i.e. to discriminate and extract properties and features from entities and situations, is just as important, not least because it facilitates blending processes, among other things, and gives them a strong creative potential. Thus, while blending serves to combine and unify separate inputs in blended mental spaces, disintegration serves to fragment or partition conceptual wholes into elements, features and partial structures that may be recruited for individual projection to blended spaces. If it were not for disintegration in this technical sense, there would be little or no basis for blending.

2. Constraints on conceptual integration

Gibbs (2000) argues that blending theory runs the risk of being too powerful, in the sense that it applies so generally that it loses its ability to account satisfactorily for individual phenomena. Depth is only too easily sacrificed for scope. Bache (2002) recognizes this feature as 'the ubiquity problem' of blending: if blending is everywhere at all times, governing the human mind in general, it can hardly account for any specific instantiations of human behaviour and human language with sufficient precision (see also Coulson & Oakley 2000: 186f).

Gibbs suggests that we tackle the ubiquity problem by formulating localized hypotheses in relation to different aspects of blending. He says:

> … it is important to realize that blending theory is not a single theory that can be studied and potentially falsified within a single experimental test. Instead, blending theory is a broad framework that suggests a variety of localized hypotheses, each of which may be experimentally examined under different empirical conditions. (2000: 349)

To be fair, Fauconnier & Turner both implicitly and explicitly address the charge that their theory is too strong: implicitly by operating with different types of blends (each of which might be associated with one or more localized hypotheses), and explicitly by introducing a number of constraints on blending. Let me give a brief survey of Fauconnier & Turner's suggestions in *The Way We Think* (2002):

A) They operate with four main types of integration networks, representing typical hallmarks on a broad continuum of blending:

> Simplex networks (which simply associate functions with values)
>
> Mirror networks (in which all spaces share an organizing frame)
>
> Single-scope networks (in which the input spaces have different organizing frames, one of which is projected unchanged to the blend)
>
> Double- (and multiple-) scope networks (in which two or more inputs have different organizing frames but each contributes to the organizing frame of the blend).

Of these, double-scope networks are by far the most complex and innovative in that they require selective projections from the inputs to create a novel organizing frame in the blend unlike that of any of the other spaces. Fauconnier & Turner attach special importance to double-scope networks by claiming that it is the capacity for double-scope blending that gives rise to a number of significant human singularities, including language (cf. Fauconnier & Turner 2002: 187).

B) In addition to their four-fold typology of networks, Fauconnier & Turner propose a set of constraints for blending (cf. Fauconnier & Turner 2002: 309ff). They distinguish between *constitutive principles* and *governing principles*. Constitutive principles are the general structural and dynamic rules determining the basic mechanism, or process, of blending as opposed to other mental or physical activities: they define blending with reference to such things as partial cross-space mappings and generic spaces, selective projections from input spaces to the blend, and the emergence of new structure in the blend. Governing principles, on the other hand, are specific optimality principles, i.e. principles which optimize the blend within the general framework defined by constitutive principles. They compress relations, complete patterns, strengthen topology, maintain connections in networks, promote vital relations, secure relevance of structure, etc. etc. – all with a view to achieving 'human scale'. They are not all-or-nothing principles but rather guidelines which help a blend succeed. Together with constitutive principles they provide serious constraints on blending, but do not in fact make it possible to predict new blends with certainty (blending is here compared to football, where we can never predict the exact outcome of a game despite the fact that it is constrained by both types of principle). Fauconnier & Turner say:

> In crucial respects, the construction of meaning is like the evolution of species. It has coherent principles that operate all the time in an extremely rich mental and cultural world. Many, many, many new integrations are attempted and explored in an individual's backstage cognition, and in interchange by members of a culture, and most of them never go anywhere. But enough survive to provide all the languages, rituals, and innovations we see around us. We need to explore what makes for success versus failure in conceptual integration. (2002: 310)

C) Fauconnier & Turner recognize other cognitive operations than blending, i.e. blending is delimited and contrasted with other mental processes. For example, we may combine different entities that we see, imagine or think of (such as a chair and a table), without blending them. In fact, many operations involving categorization and temporal or spatial sequencing serve to combine and organize experiences without conceptually integrating them. As Fauconnier & Turner say: "Of all the ways in which the brain can put two things together, conceptual blending is a relatively small subset" (2002: 351). In other words, blending may be ubiquitous, but it does not by itself account for all human cognition. Blends are a small subset of mental operations, and the subset is further constrained dramatically by constitutive and governing principles (see also 2002: 353).

D) Another important way of ensuring the depth and explanatory adequacy of conceptual integration theory is to specify the exact nature of what happens in blending. Fauconnier & Turner define three different operations involved in the blending process: composition, completion and elaboration. *Composition* is the (partial) selection of elements, structures or frames from input spaces and their projection to the blended space to create new relations and scenarios. *Completion* brings additional material from the speaker's background knowledge into the blend to enrich the relations and scenarios of the blend. And, finally, *elaboration* is the actual running of the blend, i.e. unfolding of the scenarios or development of the relations involved. Composition, completion and elaboration are mental subprocesses collaborating to create the *emergent* meaning of the blend. For discussion, see Fauconnier & Turner 2002: 42ff.

E) Fauconnier & Turner occasionally indicate that a full understanding of conceptual integration requires recognition not only of the subprocesses involve, but also of a concomitant, related process, namely disintegration.

They even go so far as to say: "Integration and compression are one side of the coin; disintegration and decompression are the other" (2002: 119). In principle the concept of disintegration further delimits blending. However, Fauconnier & Turner do not elaborate on this concept, in fact, they do not even seem to define it consistently. One of the aims of the present paper is to give disintegration a proper theoretical status in relation to blending.

Though blending may initially strike us as having silver-bullet qualities, Fauconnier & Turner have really gone a long way to place it in a much richer cognitive landscape and to tackle the ubiquity problem.

3. Another typology: levels of blending

Despite Fauconnier & Turner's efforts to constrain blending, there is still a great deal of variety in the examples that they offer which is not unambiguously captured by their typology: typical cases of blending still fall into very different categories and seem to illustrate different aspects of human cognition. In a recent paper (Bache 2002), I have therefore suggested the addition of another typology of blends which may serve to diminish the ubiquity problem even further. This typology comprises three main types, representing different *levels of increasing sophistication*: first-order, second-order and third-order blends.

First-order blends include instances of basic mental compression of complex perceptual experience (including perception-based images). In neuroscience and psychology this is often referred to as *binding* (see e.g. Domasio 1989, Domasio & Domasio 1992 and Grady 2000). Turner and Fauconnier consistently refer to this phenomenon as blending (Turner 1996: 117, Fauconnier & Turner 2002: 7f, 27, 78f, 118, 267, 315, 326, 389) and use it to show just how basic, and biologically entrenched, blending is.

First-order blends serve to unify perceptual experience, which typically activates different places in the brain, even in the case of apparently unitary entities like a blue cup or a brown horse. Despite the fact that the shape, size, colour, etc. of the cup are initially processed separately in the brain, we conceive of the cup as a unitary entity. As Turner (1996: 111) points out, our perception of what we conceive as a single, unified entity corresponds to "a widely distributed fragmentation in the brain". Similarly, in the case of events or situations, such as the throwing of a napkin, we effortless conceptualize a complex series of movements as a single coherent situation (cf. Bache 2002). Our ability to unify perceptual experience is so powerful that even separate individual events tend to be conceptually unified if they happen in sufficient temporal and spatial contiguity (cf. the flashing-light example discussed by Fauconnier & Turner 2000: 286 and Coulson & Oakley 2000: 182f, where the consecutive flashing of lights is interpreted as a single light which moves). First-order blending involves a mental abstraction from perceptual detail. The result is a more flexible mental unit which can serve a number of useful mental operations. It allows us to identify a cup as the *same* cup irrespective of our exact visual experience of it (sometimes we can even identify it without having a full unhindered view of it). It also allows us to categorize similar entities or movements as instances of the same 'thing' or 'situation', i.e. different cups as indeed cups, and different instances of throwing as indeed throwing. In other words, first-order blends help us turn the vast complexity of 'the world' into manageable mental units.

First-order blending is automatic, unconscious, inevitable and probably not species-specific in principle but certainly in extent and kind. As Fauconnier & Turner (2002: 267) say, "biology has arranged for us to live in the blend". Blending at this level concerns the relationship *between*

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perception and conception, i.e. it can be regarded as a localized hypothesis about the relationship between the brain and the mind.

Second- and third-order blends reflect higher-level mental operations on the results of basic first-order compression and integration. I use the term *second-order blends* to refer to what Turner (1996) describes as the integration of basic abstract stories with abstract grammatical structures to produce actual grammatical constructions. According to Turner, grammatical structure is the result of projection from narrative structure. He says: "Grammar results from the projection of story structure. Sentences come from stories by way of parable" (1996: 141). The examples offered involve 'caused motion', as in *Jack threw the napkin off the table* and *John pushes the ball onto the court*. Here the basic abstract story is about an agent who causes an object to move in a certain direction. This narrative structure is projected onto an abstract grammatical structure consisting of the sequence NP V NP PP with the following characteristics: the first NP is the grammatical subject and has the semantic role of agent, the V is a complex-transitive verb used for the expression of action that causes motion, the second NP is the grammatical object and has the semantic role of patient, and the PP is an adverbial used for the expression of direction. By blending the abstract narrative structure and the abstract grammatical structure we produce a blend in the form of an actual construction. Similarly, structure at clause-internal levels, e.g. NP structure, can be viewed as the result of integrating abstract functional structure with abstract grammatical structure, cf. Bache 2002.

Second-order blending thus matches conceptual and grammatical structure for the sake of actual construction-building. Once a speaker has learned his or her mother tongue, second-order blending is automatic, unconscious and inevitable, just like first-order blending. It crucially concerns the relationship between cognition and language and in fact invites us to formulate as a localized hypothesis one of the central tenets in cognitive linguistics and functional grammar, namely that *syntax is non-autonomous and non-arbitrary*. According to this hypothesis, second-order blending crucially concerns the relationship between language structure and the human mind.

Note that first- and second-order blending serve to integrate inputs which we feel ultimately derive from a common source. In the case of first-order blends, there is unification of fragments which we conceive of as somehow belonging to the same entity or the same situation, but which are processed in different anatomical locations of the brain. In the case of second-order blends, where we integrate abstract narrative structure with abstract grammatical structure, the second input space is created by way of projection from the first input space, according to Turner. So here too there is integration of inputs which seem inherently related. Note also that both first- and second-order blends are normally automatic, unconscious and inevitable.

By contrast, *third-order blends* integrate more separate and independent mental spaces, and they are therefore more transparent and less automatic. They range from everyday grammatical metaphors and metaphorical projections to creative and stylistically more sophisticated cases. As noted in Bache 2002, third-order blends are the result of conceptual integration at its very purest: they reflect further conceptual elaboration and/or culturally sensitive redefinitions of projections. More mental work is put into third-order blends because in addition to basic conceptual compression and formal grammatical construction-building, they create new mental constructs on the basis of conceptually separate input stories. One example is *same-sex marriage*, where the two components bring what used to be entirely different kinds of relationships into a new blended type. Using the expression *same-sex marriage* will inevitably result in an extension of the traditional category of marriage, and at the same time, it is likely to affect our view of same-sex relations. Another example is *Jack sneezed the napkin off the table*, where the general concept associated with the caused-motion complex-transitive construction is blended with the specific meaning of the normally intransitive verb SNEEZE. Third-order blends also include many of the other standard examples found in the literature, such as the Debate with Kant, the Buddhist Monk Riddle, the Regatta, and the expression *to dig your own grave*.

My typology of blends is meant to supplement Fauconnier & Turner's proposals to constrain blending. There are several ways in which the three different levels can serve this purpose. Since most discussion of conceptual integration involves third-order blending anyway, one possibility is to stop referring to first- and second-order blends as blends. This approach finds some support in the fact already noted that first- and second-order blends integrate inputs ultimately deriving from the same source, and that they are automatic and completely entrenched. On the other hand, despite the various differences between the levels, it is tempting to keep the full repertoire of phenomena within a general blending framework, simply because the processes involved are so similar. As suggested by Gibbs (2000), this entails the formulation and testing of localized hypotheses. Either approach will help diminish the ubiquity problem.

4. Disintegration

My second suggestion is to view conceptual integration more clearly in relation to its natural counterpart, disintegration. Hougaard (2002: 3, 48) defines disintegration thus:

> Conceptual disintegration is the process by which one unified and discrete structural element in a mental space gets to receive multiple counterpart relations and is projected to (an)other mental space(s) as two, or more, separate structural elements.

What is here referred to as disintegration is by no means absent from Fauconnier & Turner's writings. It is most often called 'fragmentation' or 'partitioning', and very occasionally 'disintegration' (sometimes the terms 'deblending', 'decompression' and 'unpacking' are close in meaning, too). But the phenomenon is simply mentioned in passing and never receives proper theoretical attention, which is strange because it is as important and pervasive as blending. Basically it is the mental capacity to discriminate and extract properties from entities and situations. It thus enables us to categorize, to pay attention to details and to divide wholes into parts, and it is also involved in all metonomy. But most important, disintegration is a precondition and motivation for blending.

In Bache 2002, I note that disintegration is a precondition for first-order blending and argue that it links each level to the next higher level. As we have seen, both first-order and second-order blends integrate aspects of what is in some sense the *same* entity or situation. In the case of first-order blends, it is only reasonable to speak of conceptual integration if we presuppose perceptual disintegration (thus extending the notion to include perception). As shown in Bache 2002, this is clearly the case in connection with situations like the throwing of a napkin, where a coherent situational

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concept is brought about by compressing the perception of a very complex sequence of movements. And, as we have seen, even the perception of what we conceive of as a single, unified entity is the product of widely distributed processes in the brain. If these assumptions are neurologically and psychologically sound, there is no single anatomical location in the brain where an entity is *perceived* as a whole. Unification happens conceptually, or 'in transition' from perception to conception. Thus, conception could be said to facilitate perception by means of blending.

Disintegration as a link between first- and second-order blends can be described as the mental fragmentation of first-order blended experience for categorizing and further blending purposes. Fauconnier & Turner (2000, 2002) have shown that as human beings we have a capacity to view entities and situations holistically, or globally, however complex they may be. But, as argued in Bache 2002, we at the same time fragment such wholes into parts, features and characteristics that can be generalized across sets of entities and situations, and this facilitates and motivates higher-level blending. Disintegration at this level does not lead to an irreversible separation of parts and elements. On the contrary, the unifying force of first-order blending persists throughout the subsequent disintegration process, creating the need to arrange the fragments in tight structural patterns. In this view, structure – in cognition and eventually also in language – is hypothesized to have arisen in a process of differentiation.

Finally, disintegration is an important link between second- and third-order blending. As stressed by Fauconnier & Turner, projections from input spaces to blended spaces are typically *selective* and *partial*. The degree to which projections are selective and partial varies according to the nature of the blend, double- or multiple-scope blends clearly reaching the highest degree, because in this particular type of blend partial structures are projected from both or all inputs. The ability to focus on individual elements and partial structures in input spaces requires disintegration. Only by discriminating and partitioning the content of input spaces can we project material selectively and partially. While preconceptual disintegration seems to be a biological fact, and while the kind of disintegration which links first- and second-order blending is largely automatic and unconscious (once we have reached biological and linguistic maturity), disintegration as a precondition for third-order blending is much more creative.

To sum up so far: in order to cope even better with the ubiquity problem of conceptual integration theory, I propose two things: a) a new typology comprising different levels of blending, and b) an extension of the concept of disintegration to cover all three levels of the hierarchy as a precondition and motivating factor for blending.

5. Evolutionary implications

How do the measures proposed affect the evolutionary implications of blending theory? Fauconnier & Turner deal with the origin of language in Chapter 9 of *The Way We Think* (2002). They especially stress the following two points:

A) We should avoid the fallacy of *Cause-Effect Isomorphism* (cf. Fauconnier & Turner 2002: 175ff). Even if the effect (language) is unusual, we should not necessarily expect an unusual causal event. In other words, the sudden appearance of language probably some 50,000 years ago should not lead us to expect the cause to be a sudden or abrupt evolutionary change.

B) We should avoid the *Function-Organ Isomorphism* fallacy (cf. Fauconnier & Turner 2002: 176f). Even if a new function (language) arises, we should not necessarily expect a new organ to have developed. Existing organs can evolve in such a way that they acquire new functions.

On this basis Fauconnier & Turner conclude that:

> Language is not an organ. The brain is the organ, and language is a function subserved by it, with the help of various other organs. Language is the surface manifestation of a capacity. It is a singularity of function, and so nothing prevents it from having arisen from a basically continuous and adaptive process of evolution. (2002: 177)

They also note that though language itself did not develop gradually through intermediate steps, the cognitive abilities that made language possible may well have. They here consider blending to play a crucial role, especially double-scope blending (2002: 179). They conclude: "In summary, continuous improvement of blending capacity reached the critical level of double-scope blending, and language precipitated as a singularity." (2002: 182).

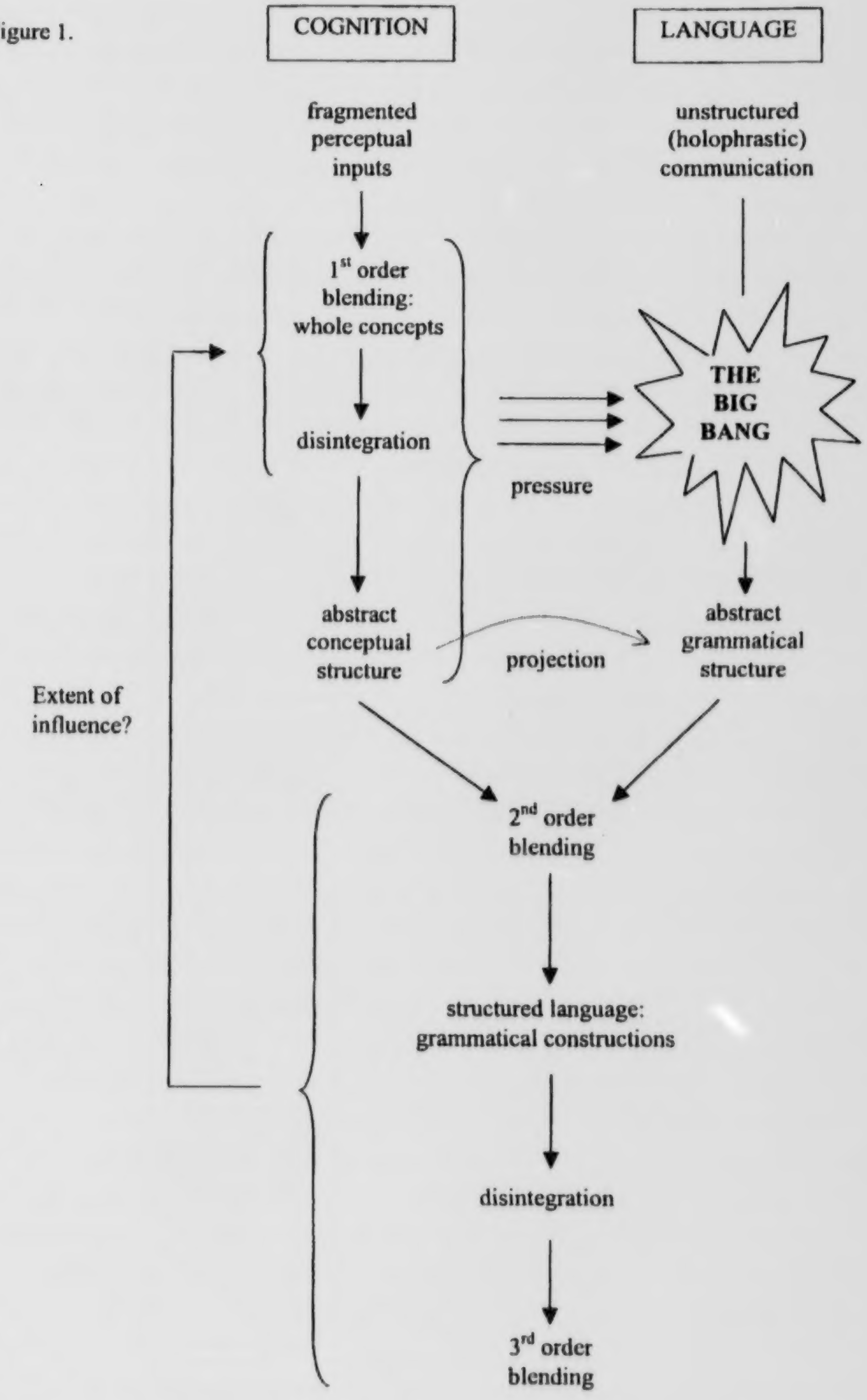
The actual emergence of language structure was also dealt with in Turner's *The Literary Mind* (1996). As we saw in our discussion of second-order blending, he considers narrative structure to be the basis for abstract grammatical structure, and actual constructions to be the product of integrating narrative and abstract grammatical structure.

The additional typology of blends that I propose, as well as the incorporation of disintegration in the model, supports and extends Fauconnier & Turners theory of the origin of language in two ways:

A) By operating with levels of increasing sophistication, it reflects a possible path for the gradual evolution assumed to cause the sudden appearance of language. If we did not have the ability to first-order blend, we could not have reached the level of second-order blending. And if we did not have the ability to second-order blend (i.e. to match cognition and language) we could not have reached the level of third-order blending (including double- and multi-scope blending). The evolutionary path begins at biologically entrenched perceptual processes, then moves on to enhanced but still unconscious cognitive abilities and further on to creative and conscious mental processes.

B) By focussing on disintegration as a precondition and motivating factor of blending, and thus as a link between the three levels of progression, we offer a possible explanation of the dynamics of the evolutionary path. First-order blending serves to impose order on fragmentary perceptual inputs. It enables us to make sense of the world. The disintegration which follows first-order blending serves to identify useful elements and features which can be generalized across sets of instances and is thus a basis for categorization – a skill that we share to a large extent with other primates and mammals (cf. Tomasello 1999: 7, 10, 16ff). As disintegration at this level becomes more sophisticated, it comes to serve also as a means to partition complex situations into manageable fragments making up narrative structures. This advanced ability to disintegrate mental wholes arrived at through first-order blending, and to arrange mental fragments in structures representing these wholes, provides us with the cognitive basis for developing language structure through second-order blending. And finally, the disintegration which follows second-order blending enables us to selectively project elements and partial structures from input mental spaces. Assuming that before language proper arose our predecessors merely communicated by means of holophrastic grunts and calls, the relatively sudden appearance of language, i.e. a fully structured symbolic means of communication, presupposes some sort of differentiation prior to second- and third-order blending. What I would like to propose is that disintegration of first-order blends exerts increasing pressure on holophrastic communication and eventually leads to 'a linguistic big bang' in the sense that it creates linguistic differentiation and hence a need for structure. It is important to note that disintegration does not lead to an ultimate and irreversible separation of the individual fragment from the other fragments. On the contrary, the unifying force of first-order blending persists throughout the disintegration process, creating the need to arrange the fragments in tight structural patterns. So I propose a reformulation of Turner's hypothesis, namely that grammar (including syntax) is more precisely a result of the projection of ***disintegrated*, *hence structured***, first-order blends. In other words, linguistic structure is hypothesized to have arisen in a process of differentiation, like complex structures in nature, rather than simply as a result of integration. Figure 1 shows the phylogenetic implications of my typology.

Figure 1.


COGNITION
LANGUAGE
fragmented perceptual inputs
unstructured (holophrastic) communication
1st order blending: whole concepts
disintegration
THE BIG BANG
pressure
abstract conceptual structure
projection
abstract grammatical structure
Extent of influence?
2nd order blending
structured language: grammatical constructions
disintegration
3rd order blending

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6. Important questions

In this paper I have proposed a new typology of blends and suggested that we give more attention to the concept of disintegration as a precondition and motivation for blending. My aim is to contribute to the solution of the ubiquity problem of conceptual integration theory. At the same time, however, my proposals have certain repercussions for Fauconnier & Turner's theory of the origin of language. I would like to conclude this paper by listing a number of interesting questions which arise in connection with my proposals:

1. Is it conceivable that perceptual disintegration (i.e. the widely distributed anatomical processing of perceptual inputs) serves as the biological basis for conceptual disintegration at higher levels? Does the ability to mentally extract features and characteristics as a basis for categorization and integration derive from the neurological fragmentation of perception?
2. To what extent does second-order blending govern first-order blending and disintegration subsequent to first-order blending? Or put differently: once cognition and language have been blended and this process has led to a fully structured language, to what extent does language govern our holistic conception of entities and situations, and their disintegration into useful and generalizable fragments? To what extent does language 'take over' once it is 'in place'?
3. And finally: What exactly is the relationship between my levels of blending and Fauconnier & Turner's typology of simplex, mirror-image, single-scope and double-scope blending? Do we need both classifications? It seems to me that Fauconnier & Turner's typology applies first and foremost to what I call third-order blends. There is

no obvious way of relating first-order blends to one or more of their four types, not even the simplest simplex networks. Second-order blending could perhaps be described in terms of simplex blending, because the matching of narrative structures and abstract grammatical structures could be viewed as a matching of roles and values. In any case, the higher we get in my hierarchy of blends, the more relevant it becomes to recognize Fauconnier & Turner's four main types.

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Conceptual Integration, Categorization, Metaphor and Idiomaticity in the New European Monetary Union (the Euro)

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Abstract

The purpose of this paper is to analyze the new conceptual reality that the European Union and, more specifically, Spanish speakers face nowadays. We will see the cognitive mechanisms that speakers activate in order to face such reality and how Conceptual Integration (Fauconnier & Turner 2002) is the basic conceptual mechanism that makes the change possible and, therefore, communication successful.

In this work I analyze how speakers face the situation when it comes to deal with a new monetary reality, and its retort in language and thought. A somehow imposed new conceptual reality is reflected in the language and shown through the conflict or "epistemic impasse" (Bretones Callejas & Martín Morillas 1999) that speakers face when they use concepts such as *peseta*[1] or *money*, and idiomatic expressions such as "Nadie da duros por pesetas" ('No-one gives dimes for cents') meaning "nobody gives money away".

Keywords: Basic-Level Categories, Cognition, Communication, Conceptual Integration, Conceptual Metaphor, Euro, Evasion, Idiomaticity, Language and Thought, Spanish.

1. Introduction: February 2002

For the Spanish, the calculation is an awkward one. The exchange of 166.386 pesetas to the euro makes for a tricky operation. A calculator comes in handy. Everybody needs an euro-converser. No-one memorizes the exact equivalent amounts, and you listen to all kind of sliding scales, formula and 'rules of three' that become our 'rule of law'. But, in fact, we realize that we need to learn it all 'by rule of thumb' ('por experiencia o por costumbre') and acquire the new conceptual reality living it.

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[1] In theory, the definition "The peseta is the unit of money that is used in Spain" (Ex. in Collins Cobuild Dictionary 1987) is no longer associated to the concept 'peseta', specifically since January 2002. Those dictionaries are now "wrong".

Prices in euros look very exciting. What used to cost 6000 now costs 36. But beware, it is the same price: 'no-one gives an euro away in return for a peseta' ('nadie regala euros a pesetas'). In fact, the metaphor that we all try to keep in mind now is the conceptual metaphor LESS IS MORE.

The detailed nature of our bodies, our brains, and our everyday functioning in the world structures human concepts and human reason, and also human mathematical reasoning. We believe the basic metaphor NUNBERS ARE THINGS in the world (Lakoff & Núñez 2000) and we all think that 'More Numbers Are More Things'. But our perception and cognition can betray us now that there is a change in that world, and make us think that what used to be more now costs less. So, we try hard to keep an imposed metaphor in mind, that is, to remember that LESS IS MORE (the Euro is More, now 1 is 166.386), and although this metaphor is not unconscious it must become so (thanks to Conceptual Integration) in order to avoid conflict, frustration or other psychological retorts.

The return of the cent, which disappeared from Spanish purses three decades ago, means even more complications when counting change. Then we try to remember again that the Cent is More (1 cent is 1.66 pesetas). Patience is recommended when standing in lines or queuing for the right change. We know that TIME IS MONEY, but this time less money than ever (Time is Few Money). We also know that the new coins and notes are an invitation for the unscrupulous to take advantage of the most defenseless (Money is Evil). The answer for many is to keep one's eyes peeled and check the small change. In extremis, even tipping is avoided just in case either you are giving too much or giving a ridiculous amount, -tough solution for the tipped and sometime unpleasant for costumers who now are not forgiven a cent. Funny situation, isn't it?

2. Cognition and Categorization

The aim of this paper is to analyze the new conceptual reality that the European Union and, more specifically, Spanish speakers face nowadays, and the cognitive mechanisms that speakers activate in order to face such reality. Conceptual Integration (Turner and Fauconnier 1995, 1998, 1999; Fauconnier y Turner 2002), together with Conceptual Metaphor, seems the basic conceptual mechanism that makes the change possible and therefore, communication successful. This paper reflects current views and models of cognition and neural information processing (Faucconier & Turner 2002, Lakoff y Johnson 1999). The relative small size of the neural networks and the relative simplicity of the environments in which they evolve, coupled with the availability of full information on both the agents and their environment, make these networks amenable to functional and structural analysis.

Conceptual Categorization is a very important process. Its simplest description would be the simple recognition of a single entity, as when we look at a coin and perceive the coin. But, as neuroscience has shown, the many aspects of the coin – the color of the coin, the shape, the material, the texture of the surface of the coin, the position and location of the coin, the cold feel of the coin in the hand, the reaching for the coin, and so on and on - are apprehended and processed differently in anatomically different locations, and there is no single site in the brain where these various apprehensions are brought together. How can the coin, so obviously a single thing for us at the conscious level, be so many different things and operations for the neuroscientist looking at the unconscious level? How we apprehend one thing *as one thing* has become a central problem of cognitive neuroscience, called "the binding problem". Normally, we do not ask ourselves how we can see one thing *as one thing* because we assume that the unity comes from the thing itself, not from our mental work. But we see the coin as one thing because our brains and bodies give it that status and human scale in an imaginative achievement. We evolved to be conscious of only the result, the Blend (Faucconier & Turner 2002).

Conceptual Metaphor is the cognitive mechanism by which the abstract is comprehended in terms of the concrete (Lakoff & Núñez 2000). Most of the abstract inferences —and much of the lexicography— for abstract concepts comes via metaphor, which functions primarily to allow sensory-motor reasoning to apply to subjective judgments. No concept is wholly metaphorical though, —there is usually some minimal conceptual skeleton in the target domain (Lakoff's lectures 2001). The mechanism called Conceptual Blending (Fauconnier and Turner 1995, 1998, 1999), shows how distinct conceptual structures such as metaphors can be bound together in well specified ways, and makes Conceptual Integration possible. Grady, in his 1997 dissertation, finds linguistic evidence that complex metaphors of the sort described by Lakoff and Johnson (1998) should actually be described as Conceptual Blends of simple metaphors (primary metaphors) that arise by conflation. For example, if you want to achieve a *purpose*, it is common to have go to a particular *destination* to do it (PURPOSES ARE DESTINATIONS). As a whole, Grady's research showed that apparently ungrounded complex metaphors were actually blends and extensions of primary metaphors.

Mental Spaces[2] and Conceptual Integration[3] are used to infer universals of human reasoning process and depend centrally on projection and dynamic simulation to develop emergent structure in a Blend. They promote novel conceptualizations, involving the generation of inferences, emotional reactions, and rhetorical force. The fundamental idea of Mental Space Theory is that thinking and speaking involve the constant activation of related mental representations. The mental spaces are set up and structured by world knowledge, cultural knowledge, and language (Fauconnier & Turner 2002).

Eleanor Rosch (1981) had demonstrated that basic-level categories have cognitive properties that are different to superordinate categories. They are defined by our capacities for gestalt perception, motor movement, and mental imagery. Compare 'chair' and 'furniture'. You can get a mental image of a chair, but not of a general piece of furniture (as opposed to a chair, bed, table or couch). You have motor schemas for interacting with chairs, but none for interacting with general pieces of furniture. So that, the basic level is the highest level at which mental imagery, motor schemas, and gestalt perception characterize the entire category and the optimal level at which people interact with objects (Lakoff, lectures 2001). As we see in the blend analyzed below, Spaniards seem to get those schemas from interacting with 'pesetas', not with 'money'. This appears to be the level at which we have evolved to function optimally in the physical environment given our sensory-motor systems. The basic-level, which is a reality about human conceptual systems, is not a mere reflection of external reality, but a matter of our interaction with our environments. Our concept of a 'chair' has to do, after all, with our ability to sit, which has everything to do with our bodies. Our concept of 'money' has to do with our ability to exchange ('transaction' is a crucial concept for society or civilization). That shows how they are fundamentally embodied concepts.

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[2] Mental spaces are the mental representations mediating between language and the real-world referents.

[3] Conceptual Integration, or Conceptual Blending, works by finding counterparts through projection with the purpose of relating novel conceptual structure to preexisting knowledge.

3. Basic-Level Category, Relation and Conceptual Integration

During the time of transition (the period when euros and pesetas where both allowed in Spain), an old lady arrives at a small grocery shop and after getting what she needs she says to the cashier (a) "I am paying in money" ('te pago en dinero'). She means that she is paying not in euros, but in pesetas. The concept of *money*, having simultaneously the concept *peseta* blended within it (see Blend in figure 1 and explanation below) is at the basic-level because it becomes crucial to our understanding and interaction with the world in a specific frame, *the commercial transaction frame*. In expressions like (a), we are prompted to integrate information from different domains in order to produce the framing. The concept of *money* is understood not only as 'coins or bank notes that you use when you buy something or when you pay for a service', but also as 'the old and always used kind of coins and notes, i.e., the only ones known and used by an individual in a specific location (Spain) at a certain time (until now)'. It is not just a metaphor because it is not to say that 'money is pesetas', it is much more.

According to what we have mentioned above, M*oney* would be an abstraction acquired through metaphor. *Peseta* would be the result of the interaction with the world object, i.e, the concept *peseta* would be at the basic level supplying schemas of interaction with the real world. The blend *money* is possible thanks to both, abstraction and integration.

Category is described by Faucconier and Turner (forthcoming) as an inner-space Vital Relation. Blending can compress outer-space Vital Relations like Metaphor into Category in the blend. Those relations could be called Basic-Level Relations, i.e., relations that make possible basic-level categorization, and that are used in a specific conceptual situation, - in this case in the European one.

What starts out as an outer-space analogy between, let's say, what you use to buy things and an ideal monetary communitary unit (euro) in a continent (Europe) is now compressed into a Category relation in the blend. So, now the euro has value, location, time, schemas, and all the properties that peseta used to have, but one more. Money has a new property, it has value outside the frontiers of your country. What is outer to *money* at the beginning, like Euro, can become entrenched by conscious imposition.

Property, like Category, is a Vital Relation in an obvious way: a *small coin* has the property *small*. The most obvious status of a *property* is as an inner-space vital relation: in the space of the *coin*, the coin is intrinsically *hard*. Blending often compresses an outer-space vital relation of some sort into an inner-space relation of Property in the blend. For example, outer-space Cause-Effect links can be compressed into Property relations in the blend. A *note* is something that allows you to get things, not something that is more than paper and ink itself, but in the blend, it has the property *valuable*. In the blend the *coin* can be *small* not only in *size* but in *value*.

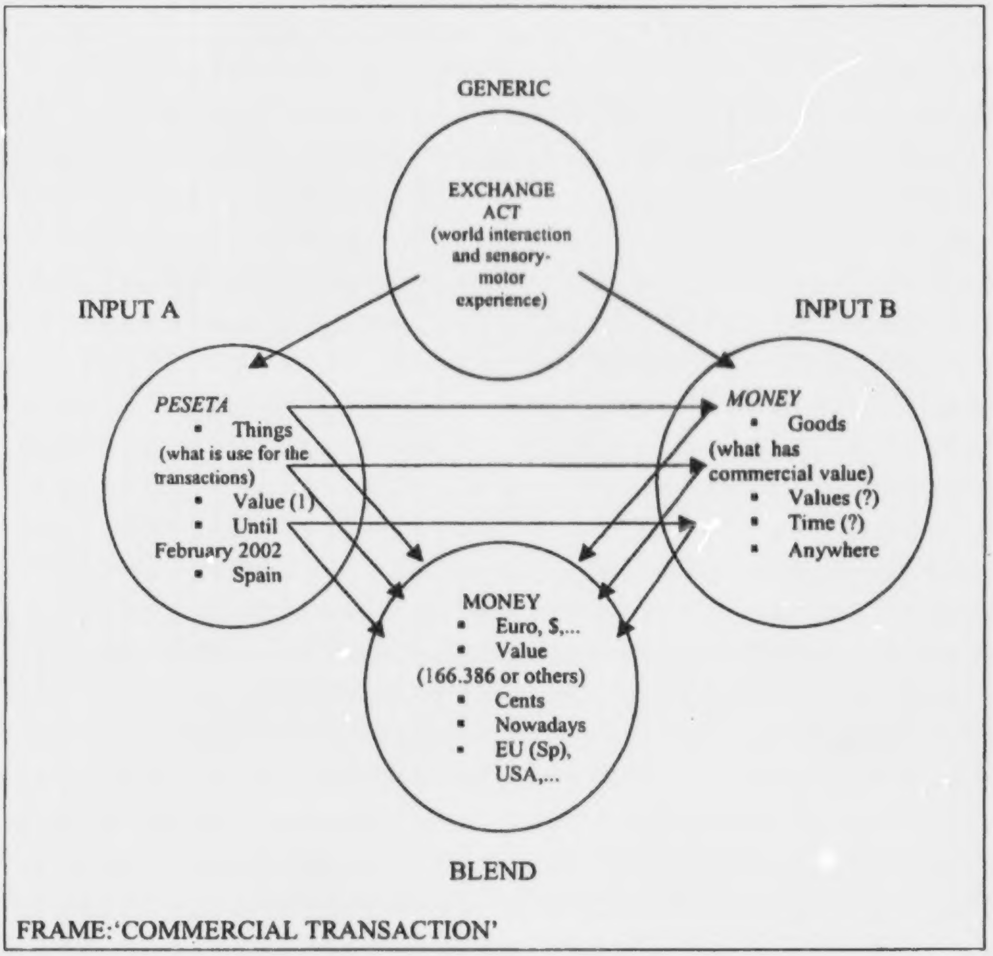
GENERIC
EXCHANGE ACT (world interaction and sensory-motor experience)
INPUT A
INPUT B
PESETA
Things (what is use for the transactions)
Value (1)
Until February 2002
Spain
MONEY
Goods (what has commercial value)
Values (?)
Time (?)
Anywhere
MONEY
Euro, $,...
Value (166.386 or others)
Cents
Nowadays
EU (Sp), USA,...
BLEND
FRAME:'COMMERCIAL TRANSACTION'

Figure 1: Blend for the concept 'money' in Spain. In this figure we also see how the process of Conceptual Integration makes possible the birth of the concept 'euro' as part of the blend.

In the new monetary situation we must be aware of the blend, or keep the blend more active (keep the blend, which was entrenched before, on-line now). Expressions such as (a) show that we are conscious of the blend so

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that we are able produce on-line structure showing the difference, that now 'money are euros'. Although we know that this must be felt unconsciously as primitive, and in this way made totally unconscious.

The elementary social structure of buying and selling as we know it emerges in this blended space. There is constraint in the emergent structure of the blend that one of the exchanged objects must be money. Money, in the form of pesetas, i.e., bills and coins, provides a key material anchor for a tight compression of the notion of goods and how to exchange them. But, when someone says "I pay with money", the linguistic expression sounds funny, unexpected and even comic (see 'comic blends' in Coulson 2001). In the commercial transaction frame we always find the frame element 'money', but when the frame element is instantiated (conflated in the lexeme 'pay') the reduplication makes it funny.

You could specify in what kind or form money appears, but it is obvious that 'money' is always involved when 'paying'. This is not the case for the lady saying (a), who is showing that her conceptual structure arises from the new monetary reality. According to her construal she excluded explicitly euros from the category money and implicitly transmitted that exclusion it in the blend.

4. Idiomaticity

A somehow imposed conceptual reality is reflected in the language and thought, and shown through the conflict or "epistemic impasse" (Bretones & Martín-Morillas 1999) that speakers face when meaning understanding and production take place. They face this situation when they use concepts such as *peseta* or *money* (see above), and idiomatic expressions such as (b)"Nadie da duros por pesetas" ('no-one gives dimes for cents') meaning "nobody gives money away". Subjects overcome the impasse thanks to Conceptual Integration, which make accessible the integration of new conceptual metaphors and the felicitous meaning of concepts such as *money* (see above).

Expressions such as (b) suffer innovative transformations, originally in search for a more explicit meaning, such as in (c) "Nadie da euros por pesetas" keeping the original meaning "nobody gives money away". This kind of linguistic innovation is totally accepted in discourse and it shows that conceptual blending is the mechanism at work making recategorization possible, -either introducing euros as pesetas or as a new category. They also show the metaphoric basis of idioms and how conceptual blending is the mechanism that integrates the new metaphors that make them possible.

Example (c) also shows that blending originates such "innovated idiomatic expressions", i.e., cases of idioms that, like regular linguistic expressions and concepts, are created in order to be more suitable in a new conceptual situation. This kind of expressions has established idiomatic anchors that make them have a different status (because they are not totally innovative). They don't have a mere creative aim but an adaptive one.

Idioms from a specific frame are normally subject to belong to the "innovated" category when a specific conceptual blend is made entrenched and omnipresent in the language. The new idiomatic expressions used by Spaniards nowadays in the commercial transaction frame are innovated idiomatic expressions coming from productive idioms thanks to new concepts such as *money* and *euro* and to idioms that are considered "syntactically productive" (Gibbs 1990:421). Speakers are not taught which ones are and which are not, but it is sure that idioms are partially analyzable and that any idioms are motivated by people's conceptual knowledge (Gibbs 1990: 422).

Let's take, for instance, the case of expressions in which *euro* is introduced instead of *duro* (five pesetas coin): "La casa que se han comprado no vale ni un euro" ('the house they bought is not worth an euro') meaning 'The house they bought is awful'; "Ese chico no vale dos euros" ('that guy is not worth two euros') meaning 'That guy is not handsome'; "No doy un euro por esa relación" ('I don't give an euro for that relationship') meaning 'I don't think that relationship is working', "Yo no pagaría por eso ni un euro" (I wouldn't pay an euro for it') meaning 'I wouldn't buy it'.

We support our argument with counterexamples in which Conceptual Integration is not possible and, as a result, the expressions cannot be said – taken for dissonant and wrong. That's the case of (a) again, turned into "*Nadie da euros por céntimos de EUROS" ('Nobody gives EUROS for cents of EUROS'). That sentence does not work.

Dollar → Cent
Euro → Cent
Peseta → ?

Dollar → Cent
Euro → Cent
? → Peset

? → 5 Dollars
? → 5 Euros
Duros → 5 Pesetas

Figure 2

The mappings represented in figure 2 show how the basic metaphor working in the examples is Less is More, and it makes possible metaphors such as Euros are Duros and Pesetas are Cents (of Euro).

5. Evasion

Intentionality covers a group of Vital Relations in conceptual integration, having to do with hope, desire, want, fear, belief, memory, and other mental attitudes and dispositions directed at content (Fauconnier & Turner, forthcoming). We interpret each other on the basis of the view that people's actions and reactions are intentional in this technical sense. Intentionality is crucial because everything we do and think and feel is based on the relations it covers. But in many occasions intentions are avoided. People wish to avoid responding to the intended meaning of another person's message. In situations like these, speakers attempt to cleverly evade the topic, or avoid blending the direct implication of what someone else has said. Overt evasions are those in which the speaker more or less directly suggests that he or she is not going to give a cooperative answer (Gibbs 1999: 164).

There are many evasions in a new conceptual situation. For instance, in Spain for a month people avoid making judgments about what is "expensive" or "cheap", about the "value" of things or even about "economy". That is all due to the fact that we are not able to establish certain vital relations in the blend . Evasion is thus, the consequence of lacking specific vital relations, or what is the same, consequence of an "uneffective blend". Blending is connected to familiarity. Relations that are vital bring familiarity to the blend (see how familiar idioms are felicitous, and unfamiliar conceptual structures are not).

A speaker may challenge the listener by condemning the original question (Gibbs 1999: 164). "A: ¿Y tú, cuánto cobras en euros? B: Lo mismo que en pesetas" (A: 'So, how much do you eran in euros? B: As much as in pesetas'). The intention of speaker B is to avoid an answer to that question, and the meaning communicated is that if A wanted to know it, she should have asked in pesetas because B won't tell (doesn't know) the sum in euros. B won´t know if she should ask "Pues, cuántas pesetas? (Then, how many pesetas?') or just change subjects. Evasion is not optional, but a necessary part of what speakers must sometimes say (Gibbs 1999:165) and in such a transitory conceptual situation it is crucial for the continuum of interaction and communication. Evasion is in fact an exceptional indicator of on-line conceptual integration.

Idiomatic expressions such as "No tengo un duro"('I have no money) or "No vale un duro" ('It is not worth a dime') and which will probably become as natural and entrenched in short as "No vale una perra gorda" ('It is not worth a cent'), for example, are getting equated to on-line innovations such as "No tengo un euro" ('I have no money') or "No vale un euro"('It is not worth an EURO'). In general, these are a bit puzzling for

Spanish speakers right now and evaded. Also literal ones such as "No tengo euros"('I don't have euros') or "No tengo ni un euro en el monedero" ('I don't even have one euro in my purse') sounded weird at first, but they are less and less evaded.

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Blending into the background: children's symbolic play, props and staging in the material world

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Extended Abstract

The vast majority of cognitive scientists, like other scientists, are materialists in their philosophy of science. Materialism has become overwhelmingly influential as the "working philosophy" or worldview of most scientists. It is incorporated into scientific methodology as an injunction to eschew any explanatory mechanism which lacks a basis in scientifically establishable material reality (leaving aside the interesting but not immediately relevant issue of what is "material" about physical entities such as energy and force). In cognitive science, the materialist worldview manifests itself in the rejection of dualism, that is, in the affirmation of some kind of unity or some level of identity between mental and neural events. This informally stated worldview is not, in itself, a fully articulated philosophical materialism, since it leaves a host of important questions about the nature and extent of such unity or identity unanswered, but its acceptance is now effectively unchallenged (at least in science), and underlies the central role accorded to both neuroscience and Darwinian evolutionary theory in contemporary cognitive science. The materialist worldview also finds expression in the key concept of *Embodiment*, which is central to the theoretical apparatus and the philosophical underpinning of cognitive linguistics and allied approaches in second generation cognitive science. The philosophy of embodied realism can be seen as a theoretical generalization of neurocognitive materialism whose goal is to obtain a materially grounded purchase on *meaning*, a social and cultural phenomenon which has, in the past, often been argued to be fundamentally recalcitrant to materialist analysis.

My argument in this paper is that a materialist account of cognition and (especially) meaning needs to take a further step, in which the constitutive mediating role of *material objects* in cognition and language is recognized and analyzed. This further step is consistent with an *ecological* approach, in which cognitive and communicative processes are *situated* in the reciprocal, dynamic and transformative relationship between an organism and its environment (including that of other organisms); and with a socio-cultural or cultural-historical approach, in which the role of the social context and of culturally-specific inter-generational accumulation of cognitive and symbolic resources are emphasized.

The particular issue which I want to address is the development of *symbolic play* in human infancy and early childhood. Symbolic or pretend play involves the projection of imaginary cognitive and symbolic value onto entities and relationships in the child's immediate environment. The entities may be objects, as for example when a child pretends that a stick is a gun, or animates a doll through making it speak, act or interact. They may be social roles, such as when children play school or play mothers and fathers, adopting roles and perspectives of imagined others. And they may be entire settings, such as when children construct a play house or play in a play corner, allocating roles, functions and identities to both human participants and the things to hand which serve as the props to the staging of the symbolic play.

In children's symbolic play, the imaginary and the real fuse or blend into an experiential arena in which the "mental" and the "physical" are, as it were, dissociated from their customary, conventional or canonical correlations, and re-assembled in a new, blended space. The characteristics of the play space are primarily governed by the knowledge of the player(s) about the "play domain", and this knowledge over-rides the immediate and conventional affordances of the physical setting. In this respect, symbolic play represents a crucial step in the actualization of the symbolic power of language as a vehicle for the construction of imaginary and counterfactual mental spaces. However, it is significant that this step is not achieved through a "retreat from" or "replacement of" the actual material world of the setting. Rather, the actual setting is backgrounded and re-incorporated into the symbolic play space. This process, in shared symbolic play, often involves social negotiation of the symbolic values to be accorded to entities of the setting (including, but not only, the human participants). If we view the construction by the child of the symbolic play space as a crucial milestone in the ontogenetic development of the human capacity for conceptual blending and integration, then we should take note of the constitutive role played in this, as in other aspects of cognitive and language development, by the material world as a world saturated by socially shared meaning and value. I will illustrate these points by transcripts and/or videos of at least one symbolic play episode.

CYBERSPACE, BLENDED SPACE
Cybespace as a conceptual integration

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Abstract

This article discusses the cyberspace as a blend, and proposes that cyberspace is a basic construal of the Internet in both combination and competition with the technical frame. It also discusses constraints and effects of intentionality, such as the tendency of intentional change of view to be blended with a movement frame in which the agent is a moving trajector, and that intentionality restricts figure-ground reversals. Intentionality also imposes limitations on construal, favouring spatial movement frames or binary tree structures instead of networks.

The method is an analysis of verbal constructions and prepositions from French magazine articles, as French is a language which has borrowed most of its Internet terminology from English. Prototypical verb frames are compared with the prepositions they take in combination with the Internet. Examples of cyberspace being blended with the market and the conflict frames are also discussed, as well as connection verbs.

In conclusion it is proposed that verbs that prototypically imply frames where the agent is a moving trajector blend with the cyberspace frame, whereas verbs belonging to frames in which the agent is not the primary trajector can blend with either the cyberspace frame or with the technical frame.

1. Introduction

The relation between form and meaning in the Internet domain in French is an interesting field of study as most terms and expressions have been borrowed from English, leading to the question how the expressions may be motivated. In this paper we will take a look at some verbs and prepositions taking the *Internet* (or a synonymous term, such as *Web*, *Net*, *Toile* or *Réseau*), as a complement.

In order to study this I constructed a corpus consisting of all the articles of the Internet version of the French newsweekly *le Nouvel Observateur*, 1996-2000. The corpus comprises about 10 million words, and 3297 instances of *Internet* or a more or less synonymous term. In studying 1003 verb phrases, which take these terms as complements, I have come to the conclusion that conceptual blending is the foremost tool for explaining Internet semantics, which is rife in metaphoric expressions. In addition to conceptual blending I use spatial relation concepts such as image schemas and trajector-landmark structure.

It is generally well known that the Internet is an international network consisting of interconnected computers. This is also one of the reasons why it is referred to as *the Net* in English, *Nätet* in Swedish and as *le Réseau* in French. A typical description of the Internet can be found in the *Encyclopaedia Britannica*:

> large, international computer network linking tens of millions of users around the world. It is used daily by many individuals for the main purposes of sending and receiving electronic mail (e-mail), obtaining mountains of information on almost any subject, or to communicate with coworkers on projects.

This kind of definition treats the Internet as an instrument, and in most cases, the Internet user sits on a chair, watching a picture on the computer screen moving the mouse with one hand and clicking on the mouse button with the index finger. Clicking on a coloured line of text or on an image, s/he makes the computer *order information* (a conventional blend) from different servers around the world. The information is then presented as a new image on the screen.

Still, most of us refer to using the Internet as movement, e.g. *to go out on the Net*, *to surf the Net*, *to go shopping on the Net*, etc., whether it is in

English, Swedish or French. Maglio and Matlock (1999:164) in a study of the expressions people spontaneously use to describe the use of the Internet note that:

> [o]verall, all web users reported a similar experience while using the web. Both beginners and experts talked about their experiences as if they had been moving from place to place even though they had not gone anywhere.

There is no perceivable similarity between the metaphors and the physical reality they describe. The only *movement* that is taking place *on the Internet* is an exchange of electromagnetic charges and/or the transmission of photons in fiberoptic cables, and of course the spinning of the hard drives in the servers.

The only explanation for this metaphorical movement seems to be that we have a conceptual integration between the relatively static use of the Internet and a general frame of movement through physical space. This is a double-scope integration in which we create a three-dimensional space which both exists and does not exist. It exists *virtually*. An integration that also blends a three-dimensional frame with a two-dimensional one, and from which all voyages on the Internet start, is the one noted by Fauconnier and Turner (2002) concerning the computer desktop where the three-dimensional frame of using a desktop is blended with the two-dimensional computer desktop. It is interesting to note that however deep we travel into cyberspace we are still in front of our computer when we have read the last page, and do not "get out" of cyberspace.

In an excellent study of the metaphors politicians use to talk about the Net, Rohrer (1997) discusses the cyberspace metaphor as a case of the *information highway metaphor*. I would however like to regard the information highway metaphor as a separate metaphor that can be blended with the cyberspace metaphor, resulting in a blend that is more part of the cyberspace metaphor than the highway metaphor. Ratzan (1998:119), who is not a linguist but an engineer, in a study of the metaphors people spontaneously attribute to the Internet, makes the remark that the highway metaphor was quite rare:

> This particular Internet metaphor appeared in only approximately five percent of the user sample. This result suggests the metaphor did not make a significant impact in the way respondents perceive the Internet. This observation is surprising given the numerous references to information superhighway in the mass media.

Ratzan also remarks that "the metaphor may be misleading and result in inaccurate expectations" (1998:166-167) due to differences between the source domain and the target domain. What was common, was on the other hand metaphors for the Internet as a place which accounted for 234 out of the 297 metaphors that the informants used to describe the Internet, according to Ratzan's categorization (1998:81). The others were categorized as objects.

2. The two basic frames

I propose that in order to describe Internet semantics we have to assume two contradictory but "blendable" basic frames, or perhaps we should call them "main frames".

The first one is the technical basic frame: the Internet is a complex structure of computers and interconnected cables. This is a technical construal motivating metaphors such as the *(inter-)net* or *le réseau* in French. From the hard drives of the computers of the Internet we can order pages that contain the information necessary to download information from other pages on the same computer or from other computer sites. This inter-referring structure of pages forms a *Web*, a *Toile* in French. However even technically the Internet is understood through sub-frames, such as the communication metaphor (probably identical to Reddy's conduit metaphor (1979)) and *the Internet as an instrument* sub-frame.

The second one is the cyberspace basic frame: the Internet/Web is a space, a world, parallel to our own where the users move. This is a construal based on the blended space created by the use of the Internet motivating expressions such as *cyberspace*, *virtual space*, etc. As it is impossible to physically move about in the cables constituting the Net this view is highly metaphorical. This frame motivates a formal integration that is popular in French for internet user – *internaute* which evokes both the domain of the Internet by *intern-t-*, and the frame of traveling by *naute*.

The information highway metaphor (Rohrer 1997) can be seen as a blend intermediary between the two basic frames.

3. Integrating the image on the screen with a geographical location

It occasionally comes as a surprise to people when one states the simple fact that the site from which they download a page is not necessarily located at the geographical location it represents. In fact, even though it is extremely unlikely that the site of this university should be located in New Zealand, there is little that would prevent it. There are for example numerous web hotels as well as a lucrative trade in domain suffixes such as .to (Tonga), .nu (Nauru) and .tm (Turkmenistan). I suggest that what we have here is a case of representation with an identity relation as well as a part-whole relation (and probably also the producer-product version of the cause and effect relation) between the page we are seeing and the geographical location it represents, creating a blend in which the image we see *is* the geographical location.

4. The role of intentionality and spatial relation concepts in the blending of movement

Changing site seems to be integrated with the changing of geographical location. To use Langacker's (1987) terminology, the image on the screen, representing a site, serves as a *landmark* and the user is a *trajector*. It is doubtful, however, whether the integration of the image on the screen and the geographical location is a prerequisite for this integration.

We could make a parallel between the use of the Internet and two other frames which we integrate with physical movement even though we do not move our bodies physically, i.e. the reading of a book and channel surfing.

If we are watching a film or listening to a story we can quite easily use figure-ground reversion, such as *as we got closer to the end of the story*... or *as the end of the story approached*...However, this is not as easily done if we include intentionality. In a phrase such as *the boy approached the girl* we assume that the boy approached the girl intentionally. If we use figure-ground reversal here we change the meaning: *the girl approached the boy.* In a phrase such as *as we were chatting, the station approached* we know that the station can not approach them intentionally and so we have to override the intentionality aspect and assume that the ones who move are the ones who are chatting, but not very intentionally – they are being transported.

I propose that we do move on the Internet because we generally conceive of Internet pages and their respective sites as landmarks and of ourselves as trajectors due to the fact that the pages are changed intentionally and also due to the fact that the pages are integrated with the geographical locations they represent. Logically we would only speak of downloading and of ordering pages from sites. Maglio and Matlock (1999:165) note that:

> [a]ccording to the data, less often is the user viewed as the passive recipient of information or as the passenger transported in some sort of web vehicle. This suggests that the semantic property of agency is primarily viewed as something inherent in the web user, rather than something inherent in the web.

This intentional change of view seems to be more easily integrated with movement in which the agent is the trajector than with movement in which the agent is a landmark or a part of it (e.g. *the page arrived* instead of *I arrived at the page*). However, if we arrive at a site or a page and we are encountering problems, we can attribute intentionality to the page or the site and have figure-ground reversal: *the page wouldn't download*. When we change channels while watching TV or when our focus of attention runs over a page or when we turn a page, we generally do so intentionally, thus we can say: *my eyes surfed over the pages of the dictionary*, or *my husband spends the evenings channel surfing*.

The word *browser*[4] suggests that the change of Internet pages can be integrated with movement between landmarks of a much smaller scale, i.e. that of turning pages in a book, which is in itself a well established blend. As our focus of attention moves while reading or turning pages we are changing landmarks spatially. We generally regard the movement of our focus of attention as physical movement. However the pages we change while using the Internet occupy exactly the same spot, the computer screen. We do not move but we perceive the change of pages as movement. The navigation between pages "in a site" can thus be integrated with the common experience of reading a book and this conceptual integration was in fact the very idea behind the Web. It is probably the fact that we integrate sites with geographical locations that blends the use of the Internet with our mental models of geographical space.

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[4] It is interesting to note that the French translation of *browser* is *navigateur* which borrows a term from movement in the sea frame due to the same cross domain mapping as *surfer* and *naviguer*.

I am not going to delve into the complex array of mental spaces that are created while reading, but it seems as though we do base the experience of reading a book on two well known image schemas, the path schema (*to begin a book* and *to finish a book*) and the container schema (*to go through a book, to be in the middle of a book*), and we seem to do so while using the Internet as well (*to surf the Web* and *to be on the Web*). However, while the container schema created by the reading of a book, the blend we are living in while reading it, can be identified with the book as a container, the use of the Internet, the navigation on the Internet, is not perceived of as identical to the computer. It creates a space that is of a much greater size, it is international, it is a world, a dimension, parallel to our own, it is *cyberspace*. Since it exists and does not exist at the same time, it is *virtual*.

The actual blending should be similar to the one identified by Hutchins (quoted in Fauconnier and Turner 2002:208) concerning the integration of loci:

> The method of loci sets up a simple trajectory of attention across a set of features, let us call them landmarks, of the environment. One may establish a flow through the environment that brings attention to the landmarks in a particular order. This is a layered blend. The initial input spaces are the shape of the motion of a

> trajector[5] and the set of landmarks in the environment. Together these produce a blend that is the sequential flow through the landmarks of the environment. The sequential relations of the landmarks are an emergent structure of the blend.

It seems logical to assume that *browsing* is a frame subordinate to movement in general, due to conceptual integration, and that we should base an analysis not on regarding the specific frames such as *surfing, shopping, browsing, searching* and *navigating* as anything else but frames subordinate to a general frame of movement, in combination with other frames, i.e. *surfing* and *navigating* are also part of a *sea frame*, *shopping* of a *market frame* and *browsing* of a *reading frame.*

If the surfing frame is integrated with the use of the Internet it should be rendered possible by the fact that the movement between landmarks is intentional, repetitive, fast and for pleasure, and depending on our experience of surfing also mixed with uncertainty and waiting[6].

This general movement frame and its subordinate frames can be described by using the theory of image schemas (Johnson 1987, Lakoff 1987). Cyberspace is then a container and the movement in this container is the source-path-goal schema. I would like to emphasize that it is hard to imagine that one is moving unless it is in a three-dimensional frame.

5. Intentionality and networks

Cyberspace as the basic semantic component when talking about the Internet would be much simpler than the construal of the Internet as a network. According to empiric studies in intentionality conducted by

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[5] This shape of the motion of a trajector that Hutchins notes, I would regard as the path schema which is closely connected with the long thin object schema.

[6] The last two aspects was noted by Charlotte Allesson at the University of Stockholm in personal communication.

Dunbar and colleagues (1996) it is difficult to actualise more than three intentions simultaneously. We could compare this to the difficulty of following directions, and the mere keeping in mind of the number of paths necessary to create a network structure should simply impose too heavy a cognitive load, for most of us. I strongly suspect that this is why binary tree structures are so popular, as we do not have to keep more than three relations in mind at the same time.

For instance, Berners-Lee, the inventor of the Web, only thought of the expression *Web* when seeing the lines of his drawings form a netlike structure (Diberder 2000:128). Ratzan also notes that "The Internet may be a network of networks but few users see it as such." (1998:172). The fact that *Web* and *Net* refer to similar images was however probably not a disadvantage to the term *World Wide Web*.

I suggest in fact that the Internet as a network exists only as a conventional image and if we understand the Internet as a network it would constitute the netlike surface of cyberspace. This net could not be the result of the experience of using the Internet but the result of knowledge and of the net as a conventional image.

However, in the view of specialists and in our general knowledge of the Internet it is a network in the same right as social networks and road networks. However, we rarely confer upon the road the title of network unless we are talking of technical matters. It is interesting to note the increased interest in network structures, in for example linguistics and sociology, and perhaps this is due to increased awareness of network structures due to the introduction of the Internet.

6. How does this turn out in a linguistic material?

In order to bring some order into the very rich variation of verbal constructions that can take *internet*, or a synonymous term, as a complement, I have studied certain verb frames. I will present three studies that I have conducted covering the frames of verbs that prototypically refer to movement through space, the market frame and the frame of accessing the Internet. This discussion will just give a cursory look at the results and the material. For a more detailed discussion I refer to my forthcoming thesis.

6.1. Verbs that prototypically refer to movement

Concerning the verbs that express "sending" or "receiving" an object we have the possibility of inserting the agent and the action in either of the two basic frames: the Internet as a *space* or the Internet as an *instrument*. The verbs in table 1 belong to frames where the *trajectors* are primarily not the agents, and about 59 % take the preposition *sur* "on" whereas 41 % take other prepositions followed by *Internet*, or a synonymous term.

Table 1.

verb\preposition	*sur* 'on'	*via*	*Par* 'by, through'	other
commander 'to order'	3	0	3	0
(*re-*)*transmettre* 'to transmit'	3	1	1	1 (*à*)
transférer 'to transfer'	1	0	0	0
télécharger 'to download'	2	2	0	1 (*à partir de*)
répondre 'to answer'	1	0	1	0
recevoir 'to receive'	1	0	0	0
envoyer 'to send'	6	0	1	2 (*dans*, *vers*)
correspondre 'to communicate by letter'	2	0	0	
communiquer 'to communicate'	4	1	2	
total	23	4	8	4

We can contrast this study with another study in table 2 in which the verbs refer to frames where the agent prototypically is a moving trajector[7]:

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[7] In this category I have not included the verbs that express entering the Internet, such as *aller sur* "to go out on" and *accéder à* "to access". I study them among the connection verbs.

Table 2.

verb\preposition	*sur* 'on'	*via*	*par* 'by, through'	other
surfer 'to surf'	40	0	0	0
naviguer 'to navigate'	10	0	0	0
débarquer 'to disembark'	3	0	0	0
chercher 'to search'	6	0	0	0
collecter 'to gather'	3	0	0	0
(*re-*)*trouver* 'to find'	20	0	0	0
others[8]	14	0	0	1 (*aux quatre coins de*)
total	96	0	0	1

My hypothesis is that the prototypical frames of the verbs where the agent is the moving trajector only blend with Internet as cyberspace. The preposition *sur* "on" then expresses not only that the Internet supports the action but also that the agent is localised on the imaginary surface of the Net. This blended space may be blended, but not necessarily, with another input space in which we have a person using a computer and we have a blend in which the person virtually is moving on the Internet.

Concerning the verbs expressing "searching" and "finding" with the preposition *sur*, it is possible to integrate them with a more technical frame in which we search and find on the computer screen, however this does not correspond well to the actual experiential scenario of searching and finding on the Internet. I suggest they correspond to the cyberspace frame.

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[8] *voyager* 'to travel' (1), *butiner* 'to search like a bee' (2), *aller à la pêche aux infos* 'to go info fishing' (1), *chasser* 'to hunt' (1), *capter* 'to catch' (1), *pister* 'to track' (1), *défricher* 'to clear land' (1), *dénicher* 'to find' (2), *découvrir* 'to discover' (2), *glaner* 'to collect' (1), *éparpiller* 'to collect' (1).

6.2. Market verbs

Buying and *selling* may seem to be "mirror" verbs reflecting just two roles in a market frame. A buyer, who generally is searching for things to buy, is however prototypically more mobile in his sub-frame than the seller, who generally is behind a desk. This may be the reason why the verbs for buying virtually always take the preposition meaning "on", whereas verbs for selling have more of variation.

Table 3.

verb/preposition	*sur*	*via*	*par*	other
acheter[9]	11	0	0	0
faire des achats	3	0	0	0
faire des courses	2	0	1	0
Faire des emplettes	2	0	0	0
faire le marché	1	0	0	0
total	19	0	1	0

Table 4.

verb/preposition	*sur*	*via*	*par*	other
vendre[10]	14	2	3	1 (grâce à)

The verbs for buying have the preposition *sur* in 95 % of the cases and the verb for selling in 70 %. The figures are not overwhelming but seem to correspond to a recurring pattern in my corpus.

There is a number of instances where the market frame and the conflict frame are blended with the cyberspace frame, and I will give two illustrating examples below:

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[9] E.g. *il achète des livres sur Internet.*

[10] E.g. *il vend des livres sur Internet.*

(1) « Les patrons français à la conquête du Net » du « Paris Match » d'il y a quinze jours ? Une horreur ! Vous savez comment ils s'étaient mis pour montrer à quel point ils *allaient* « à la conquête du Net »[11]

In this blend we must assume at least two contributing frames: the war frame, and the market frame. Internet is described as a market that can be conquered by the French. The war frame is the structuring frame. In the war frame conquerors correspond to CEOs in the market frame, and armies and strongholds in the war frame correspond to firms and market niches in the market frame. These agents and objects map onto the cyberspace frame where we have the existence of sites representing the firms and their owners.

The seemingly most complex blend in my corpus is the following example:

(2) Jetez-le par la fenêtre (informatique), il réapparaît par le portail (web) ! Après son cuisant échec sur Olivetti, Carlo De Benedetti *revient en phénix de* l'internet[12]

In order to understand this sentence we have tc recruit five different frames: *building*, *cyberspace*, *conflict*, *market* and *mythology*. First, we have a building frame (*fenêtre* "window" and *portail* "portal – door") integrated with the cyberspace frame. The dynamic is provided by a conflict frame blended with a market frame giving us an entire scenario: a person is thrown out through the window only to return trough the door. Here the window of the building frame maps onto the window of the computer screen serving as a window between the real world and cyberspace.

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[11] C'est pas de la start, François Reynaert, 1839, 2000.
[12] BENEDETTI, LE CYBER-REVENANT, Marcelle Padovani, 1842, 2000.

Then we add to the blend a mythology frame where the conflict frame and the mythology frame provide the dynamic. In this blend Benedetti wins and returns from the Internet as a winner. Benedetti is integrated with the bird Phoenix. The bird burns to ashes which is mapped onto the initial failure of Benedetti, is reborn which is mapped onto Benedetti's return into the building. The return from the Internet is the victor coming back from battle blended with the bird Phoenix leaving the ashes causing a blend in which the Internet is an area covered in ashes. This is a complex blend recruiting from at least five domains. Intuitively the most logical Internet frame should be cyberspace.

6.3. Connection verbs

A field of verbs expressing a most technical domain in Internet use is the verbs for accessing the Internet. Those verbs are *accéder à*, *brancher sur*, *relier à* and *connecter à/sur*. It is interesting to note the co-existence of *connecter à* and *connecter sur*, and the question is whether the preposition may reveal a blend between the technical model and the cyberspace model. These verbs (save *accéder à*) have a double meaning. One that refers to the plugging in of a physical connection between a computer and a server, while the second meaning depends on whether we recruit the technical frame, in which case it means "to establish communication", or the cyberspace frame, in which case it means "to go out on the Net".

Apart from *accéder à*, these verbs exist in three basic constructions. One basic construction *agent + V + patient + preposition + Internet* (e.g. *On connecte les français à Internet*), one reflexive, in which the agent is also the patient *agent + reflexive pronoun + V + preposition + Internet* (e.g. *Il se connecte à Internet*), and a past participle form (together with which I co-categorized the adjectival form) *N+ (être) + Vpp + preposition + Internet* (e.g. *Il est connecté à Internet*).

However, the instances of these verbs are not very revealing as to whether they refer to the technical model or to the cyberspace model. On the other hand, in my corpus, the reflexive form never occurred with computers as agents, but it could occur with institutions as agents. There were also a large number of metaphorical expressions, which revealed that even instruments could *go out on the Internet*:

> (3) Vos enfants (et vous-même) n'auront qu'à commander à votre machine d'*aller sur* Internet c'est déjà possible aujourd'hui et elle *ira*.[13]

Even people could be described as being *tied to the web* of the Internet:

> (4) […] son éloge de la vie villageoise, s'il *était couplé à* la toile du Net, préfigurerait peut-être la société éclatée de demain.[14]

These blends are replaceable with *connecter à*. However, they suggest that the form of the connection verbs won't tell us much about their semantic content if they are already, by blending, associated with movement in connection with the cyberspace blend. I came to the conclusion that the most revealing way of analyzing the difference between prepositional use was to look into the trajectors.

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[13] Parlez-lui donc, Gérard Petitjean, 1768, 1998.

[14] Deux ouvrages sur l'Inde, Brahma.com, Pascal Bruckner, 1848, 2000.

Table 5.

TR/verbe	*accéder à*	*brancher sur*	*connecter sur*	*connecter à*	*relier à*
human	17	9	4	12	4
instrument	0	0	1	13	10
institution	0	3	1	3	1

Apparently, *accéder à* only took human trajectors which should be logical considering that it is a verb that prototypically implies a human agent who moves into a container. The preposition belongs to the prototypical use of the verb. The same preposition is used for *relier* and for *connecter*, which prototypically refer to the creation of a physical link, whereas *brancher*, and occasionally *connecter*, takes the preposition *sur*.

The use of these verbs for the sense of "accessing the Internet" is probably derived from a technical blend in which we recruit a frame that is very similar to, or identical with, Reddy's conduit metaphor (1979). In this construal the computer and the server *communicate*.

(5) Si tous les ordinateurs *connectés à* Internet se comprennent, c'est parce qu'ils parlent la même langue, le TCP/IP.[15]

It is very interesting to note the tight connection there is between words expressing links and the domain of communication. We talk about people as being connected when they are well informed. Thus when we talk about communication as a link (as in *com-link*) we may be highlighting the conduit of the conduit metaphor. My hypothesis is that the difference between the link schema and the path schema is that in the former case the trajector is static and does not move towards or from the landmark, whereas in the latter case the trajector moves on the path which serves as a landmark.

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[15] Le mulot et la toile d'araignée Pour ne pas cliquer idiot, Jean-Edouard Choppin, 1793, 1999.

If we e.g. talk about objects that are being sent through a conduit, or on a path, we regard them as trajectors and the path as a landmark (a *car is passing on a road*, or *a leaf is drifting on the river*). However, if we talk about the two points between which they are moving we regard these points as trajector and landmark and talk about the conduit, or the path, as a link (*the road connects two towns, the river connects two harbours*).

It is not surprising in this context that *brancher* has a larger number of human trajectors than *relier à*, because in the category of meanings that have the form *brancher* there is a number meanings denoting movement, such as *l'oiseau s'est branché sur l'arbre* "the bird perched on the tree", *j'ai branché la conversation sur un autre sujet* "I moved the conversation onto another subject". I suggest that *brancher sur* and *connecter sur* usually refer to movement into cyberspace, and that they thus are more similar to *aller sur Internet* than to *relier au Net*. They should thus conform to a recurring pattern in language in which a static long thin object is blended with movement, and this is what Talmy calls *fictive motion*, Langacker (1987) *abstract motion* and this is discussed by Fauconnier and Turner (2002:376ff) and Fauconnier (1997:177ff). This cognitive mechanism has also been noted by Lakoff (1987) as the image schema transformation of *trajectory schema – long, thin object schema*.

As a final clue as to which basic frame the terms refer to, *relier à* and *connecter à* have in 1 out of 2,2 cases a term evoking a netlike structure such as *le réseau* and *la toile* as a complement, while, in contrast *connecter sur*, *brancher sur* and *accéder à* only has this sort of complement in 1 of 10,7 cases.

7. Conclusion

The ease with which these spatial frames integrate with an Internet that is completely different in character leads to the question whether the general construal of the Internet is not simply *the Internet as cyberspace*. The difference between a "realistic" construal of the Internet and a space is striking, and I suggest that choosing between the two construals we generally choose the one that imposes the smallest conceptual load. In the cases that I have just discussed I regard as most likely that we, in on-line understanding, just blend the different spatial frames with the frame of the Internet as cyberspace.

I have suggested that the choice of prepositions is due to which model of the Internet prototypical frames integrate most easily with. If we blended frames with a moving agent with the technical model we should logically occasionally see constructions such as *chercher via* and *surfer par*, in case the technical frame had influenced the blend. However these were non-existent in my corpus (save one instance of *acheter par*).

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"How to Build a Human: Genes, Blends, and Popular Culture"

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Abstract

Scholars working within "conceptual integration" or "blending" theory (Turner 1998; Fauconnier and Turner 1995, 1998, 1999, 2002) are investigators of meaning. Blending theory is useful since it makes explicit some of the principles in our capacity to make both conceptual and linguistic connections across domains. The theory is even more useful for observing at the cultural level blends that form over time in certain contexts. To demonstrate this process, I focus on several popular culture examples about genetics in this paper. I analyze genetic blends in an anti-GM food advertisement by the Turning Point Project, a BBC television program called "How to Build a Human," and a novel by H.G. Wells: *The Island of Doctor Moreau*. In short, I argue that our reactions to genetic science can be understood more clearly thanks to blending theory.

Genetic discourse is becoming evermore pervasive in popular culture. One finds it in literature, film, journalism, humor, advertising, popular science, and so on. The rise of genetic discourse perhaps reflects a new belief in a sort of genetic gold standard for explanations. The belief results from sensing it is no longer enough to say that human activity is socially determined. One must now go genetic with one's explanation by assuming specific genes to be the biological causes for a certain effect to be accounted for. In this manner, for example, a learning disability such as dyslexia results not from laziness (the old view) but from neurological shortcomings in the brain's left hemisphere (the new view). Those shortcomings, in turn, may be held to result from "faulty" genetic programming in initial fetal development. In this case and others like it, the new urge to go genetic is an attempt to answer old and difficult causality questions regarding human issues. However, as I argue in this paper, some of our cultural ambivalence towards genetic technology may arise from problems we have with forming certain "conceptual integrations" or "blends" (Fauconnier and Turner 1995, 1998, 1999, 2002).

Our ambivalence to genetic science is very apparent in the recent debate over genetically modified (GM) food. As the Turning Point Project from Washington DC demonstrated in the autumn of 1999 (in five full page advertisements in section "A" of *The New York Times*), scaring people about GM food was easy. As I have argued elsewhere (Hamilton in press), the Turning Point Project discovered that conceptual integration was by far the most effective rhetorical method for evoking fear or doubt in the minds of readers. This is no surprise since, as Fauconnier and Turner (2002: 54) put it,

> In one sense, everybody knows everything about blending and is a complete master of the operation, in just the sense that each of us has complete unconscious 'knowledge' about vision but almost no conscious knowledge of our unconscious ability.

This blending ability is most evident in the Turning Point Project's "Genetic Roulette" ad from 26 October 1999 on page A13 of *The New York Times*. In this ad, a rhetorically powerful blend frames the Turning Point Project's stand on GM food. An image of a Monarch butterfly, which lives in cornfields and migrates between Mexico and North America every year, dominates the ad. This is because GM corn is assumed to harm butterflies in a way regular corn does not. Above the Monarch, in big bold letters, is the phrase "Genetic Roulette." Here a blend comes into play immediately since "genetic roulette" is a metaphor constructed by conceptual integration. This blend clearly assigns negative values to genetic engineering and it implies several things. First, biotech scientists are gamblers. Second, genetic engineering is gambling. Third, the stakes are genes rather than dollars. Fourth, the activity is reckless rather than principled. Fifth, the outcomes are unpredictable and dangerous rather than predictable and safe.

These five implications (and there may be more) clearly reveal correspondences between the two major inputs. However, the blend results from two crucial mismatches. Selective projection, even if a poorly understood mechanism (Glucksberg 2001: 34), still maintains in theory that not all structure from the inputs will get projected into the blended mental space (i.e. the emerging semantics of the metaphoric expression). The blended space is therefore not merely the sum of all its related parts. Rather, some structure is salient for the blended space, some is not, as selective projection would predict to be the case. The genetic roulette blended space in practice thus includes only those items that are most relevant from the gambling input space because they impinge directly upon the formation of the blend. Those items are, namely, mentioned above as implications four and five: risky recklessness and dangerous unpredictability. In this case, those who "play" at genetic engineering are undertaking work that is as reckless, risky, unpredictable, and dangerous as those who play roulette in a casino (perhaps the gambling game with the greatest level of chance). The ad reinforces this point when it comes full circle by telling us that "Earth's four-billion-year genetic legacy is at stake" when we genetically modify our food today. While it may be fine to lose money, since a fool and his money are easily parted, this is not case with our "genetic heritage" or "genetic legacy" according to the ad.

If anything, the Turning Point Project's ad highlights categorical extension at work in conceptual blending. For example, near the end of the ad the Turning Point Project repeats its view that GM foods will "subject all of us and nature to a kind of *genetic roulette*." Just as the novel adjective in "Russian roulette" completely changes the meaning of "roulette," so too does "genetic" change the meaning of roulette here. Those changes in meaning come about by a modification of the roulette category, a modification prompted by the novel epithet as we run the blend. More specifically, from our roulette prototype, we have one extension occurring with "Russian roulette" and another one occurring with "genetic roulette."[i] These categorical extensions in cognitive terms are the result of blending. It is precisely our ease in making such extensions that explains the rhetorical power of this advertisement against GM food. At times, however, the extensions are not so easy to make. There is resistance ("Harvest of Fear" 2001: 12) when we cannot imagine what to call, for example, a strawberry that has an Artic flounder's genes spliced into it in order to make the strawberry resistant to frost. Problematic categorical extensions of this sort might explain our conceptual resistance to genetic engineering, especially when it comes to humans. In terms of popular culture, this can be found in "How to Build a Human," a recent television program from the UK's BBC 2 channel.

In what would seem to be a reference to Jean Mandler's (1988, 1992) influential "How to Build a Baby" articles, the BBC turned genetic science into popular science with "How to Build a Human." The program aired in four parts in fifty-minute episodes in the UK on BBC 2 in January 2002. The first episode on 7 January, "Creation," addressed cloning, stem cells, and how genes make each human unique. The second episode on 14 January, "Predictor," addressed genetic causes for human actions like murder, genetic engineering, and inheritance (i.e. phenotype expression). The third episode on 21 January, "The Secret of Sex," addressed sexual hormone influence on cognitive function, sex chromosomes, and genetically enhanced athletes (i.e. athletes who in future may want abnormally high levels of testosterone spliced into their genes so as to boost their performances without taking drugs). The fourth episode on 28 January, "Forever Young," addressed life expectancy and the genetic basis for long life.

Throughout the entire program, two central conceptual blends framed the topic. First, a "how to" blend came to life as our "how to" user's manual schema, from such popular book titles that might read something like *How to Build a Car* or *How to Build a House* or *How to Bake a Cake* became integrated with a human being that viewers might build in their free time on the weekends in the garage. From a "how to" input space, we complete the pattern evoked by the initial phrase by taking a human reproduction input space and blending the two together. In this case, what is made or manufactured is not a car, or a house, or a cake, but a person. This "how to build a human" blend is extremely novel and emerges so as to surprise potential viewers and draw them to the program. Of course, those expecting a pornographic program, or those hoping to see God's notebook, would have been very disappointed with what the BBC broadcast.

The second major blend here follows on from the first and combines it with an image. Figure 1 below is the logo for the "How to Build a Human" program. As this figure from the BBC's website for the program might suggest, the human reproduction input space can be blended with another space: a reptile about to break out of an egg. What is fascinating about this blend is that it is counterfactual (a hallmark of highly provocative blends). First, humans are born as babies, not as adults, but in the blend above an adult human appears to be waiting to be born. Notice the taut clear skin of the adult, for example, as opposed to chubby marked skin of a newborn. Second, humans are mammals, born live from wombs. They are not hatched from autonomous eggs like birds. In the blend, however, the human appears fully developed, mature, and waiting to break out of the transparent egg shell (itself remarkable since egg shells are not transparent while womb walls might be).

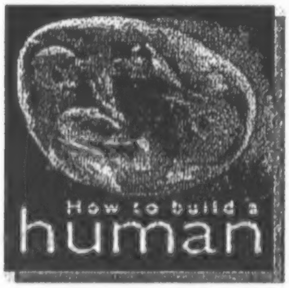

Figure 1. The "How to Build a Human" Visual Blend

In at least the two ways mentioned above, then, the blend is counterfactual. Where we would expect a mother's womb and a baby, we have instead a free-floating egg and a mature human.

However, it is precisely these counterfactual facets of the blend that genetic science provokes with its continued advances in artificial human reproduction. At a cultural level, this blend reveals tremendous pressure on the human reproduction input space to extend as a category and include newer or less conventional ways of reproduction. Our ability or inability to extend this category, again, highlights a blend some in our culture are refusing to run. Thus, conceptual friction may fuel social reactions to this type of science. Of course, when it comes to genetic discourse, our ambivalence is to be expected given our cultural history about the topic. For

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example, literature has paved the way by already imagining scenarios for us that science only decades later could imitate in the laboratory. The case of Aldous Huxley's *Brave New World* from 1931 demonstrates this most clearly. It was only in 1997 that a mammal (i.e. Dolly the sheep) was successfully cloned. We are still waiting to see when and how and where humans might be cloned more than seventy years after Huxley. However, another older example of literature's foreshadowing capacity would have to be H.G. Wells' fascinating 1896 novel, *The Island of Dr. Moreau.* Most peculiar in this story are the effects conceptual blends have directly upon the protagonist's psychological states. For this reason, I focus on Wells' text at length for the remainder of my discussion for the text reveals some emotional consequences of blending that are rarely discussed by cognitive linguists.

As some may already know, the protagonist in the story, Edward Prendick, arrives by accident on Dr. Moreau's island. On his arrival, he learns that Moreau's creatures persistently defy easy definition or categorization. They are nothing more and nothing less than "hybrids" (Costa 1967: 38) or living blends. They are in essence animals engineered to resemble humans in many ways. The animals are not fully human although Moreau shapes most of them into resembling humans morphologically. Likewise, for Prendick their personalities are analogues to human ones even as the hybrids eventually return to a resemblance of their normal and natural states by novel's end. What is most peculiar about Prendick's encounters with these beings is that each encounter reveals fundamental limitations to the imagination in at least two ways. First, Prendick's established categories for the animals transformed by Moreau are challenged throughout much of the novel. Second, this challenge slowly leads him to re-define the creatures as genetic hybrids, something that takes quite some time to achieve in the course of the novel and which provides the plot with its element of suspense. Clearly, Prendick's terrible emotional reactions result from limits on the imagination. This is because his past experiences have not prepared him mentally for his ordeal on the island. As I explain below, Prendick's conceptual crisis develops in many interesting ways.

Prendick's first encounter with one of Moreau's genetic hybrids takes place even before he reaches the island. Aboard the schooner that has rescued him and will take him to the island, Prendick sees M'ling for the first time. M'ling, a servant for Moreau and Montgomery, seems to Prendick to be a "nightmare" because of his "dark face with extraordinary eyes" (Wells 1896: 11). This is Prendick's initial impression. Because his next impression of M'ling when he sees him later on deck is of "a misshapen man" (Wells 1896: 16), Prendick remains confused for a long time as to who or what M'ling actually is. Afterwards, he usually refers to M'ling as a "black-faced man" for he assumes that M'ling is a man possessing animal traits rather than an animal possessing human traits. What is the consequence of this? By placing M'ling in the category of the human, and thus defining him first and foremost as a man, Prendick temporally overcomes his uncertainty about M'ling. This feeling does not last for long, however, for Prendick several pages later tells us: "The thing came at me as stark inhumanity. That black figure, with its eyes of fire, struck down through all my adult thoughts and feelings, and for a moment the forgotten horrors of childhood came back to my mind" (Wells 1896: 24). Such a strong emotional response is caused by a failure of the imagination, a failure on Prendick's part to accurately define or categorize M'ling.

Whereas M'ling at first seemed to be a man to Prendick, he now seems to be a "thing" that cannot be classified in any conventional sense. Later Prendick will see M'ling differently when he identifies him as a "black-faced cripple" (Wells 1896: 30), a "misshapen monster" (Wells 1896: 42), "one of the strangest beings" he ever saw (Wells 1896: 41), and "a bear, tainted with dog and ox" (Wells 1896: 91). Prendick's descriptions here are important for a couple of reasons. First, as John Batchelor claims, "the grotesque or distorted facial expression becomes a motif in the story" (1985: 19). Second, according to Batchelor, "Details of the characters' faces are carefully noted as moral indicators; negative indicators in every case" (1985: 19). However, the "details" in fact are clues as to how Prendick's own mind works. That is, his remarks reveal his attempts to pin down the identity of the creatures rather than simply pass moral judgment on them straight away. And yet, as is the case often with Prendick, his emotional reactions to the hybrids are the direct result of a conceptual crisis. For instance, when he reaches Moreau's island, he first notices "the oddness of the brown faces of men who were with Montgomery in the launch" (Wells 1896: 28) and he sees three "strange brutish-looking fellows" as he is towed towards the shore (Wells 1896: 30). After seeing these fellows for the first time, an emotional reaction follows. As Prendick states, "I saw only their faces, yet there was something in their faces – I knew not what – that gave me a queer spasm of disgust" (Wells 1896: 31). His disgust, it would seem, occurs since he judges this odd crew to be "an amazingly ugly gang" (Wells 1896: 31). He does so because his benchmark for measurement is human rather than animal. By comparison then to the three "grotesque-looking creatures" (Wells 1896: 32), M'ling seems less ugly for he at least is called a "man." Eventually, however, Prendick's category of man imposes itself on these hybrids for he describes them next as "three muffled men" (Wells 1896: 32) and assumes still that they are genetically modified men rather than genetically modified animals.

The challenge to Prendick's categories is relentless. Once in Moreau's headquarters he refers again to "those unaccountable men" of Moreau's and is soon thrown into despair when he asks himself: "What was wrong with them?" (Wells 1896: 37). This is only made worse when M'ling brings him a tray of food. Noticing M'ling's pointed and furry ears, Prendick writes: the "astonishment paralyzed me" (Wells 1896: 37). This crisis of the imagination alters Prendick's emotional state and forces him to reconsider the identity of the hybrids he encounters. Therefore, when Prendick mentions an "odd leap" in his thinking (Wells 1896: 39) near the end of chapter 7, he is referring to his struggle to make sense of the hybrids, of his effort to stretch his imagination (via conceptual integration) into seeing how men could be mangled into the forms found on Moreau's island. Because "men" like M'ling seem to him to be so fearfully "unnatural" (Wells 1896: 41), Prendick's nerves refuse to settle down. Nowhere is this clearer than in chapter 9, where Prendick is confused about three creatures with "a swinish taint" because he had "never seen such bestial-looking creatures" before (Wells 1896: 46). Likewise, his first encounter with the Leopard Man robs him of his "drowsy tranquility" and leaves him "greatly disturbed" (Wells 1896: 44). And as the chase with the Leopard Man begins, Prendick's fear is as much a symptom of the chase as it is of his inability to define his enemy. As he asks himself in desperation: "What on earth was he – man or animal?" (Wells 1896: 47). The problem of answering this question no doubt fuels what Prendick later calls his "disordered imagination" (Wells 1896: 49). Whereas he first saw the creature as a man "going on all fours like a beast" (Wells 1896: 44), he later reasons: "It was no animal, for it stood erect" (Wells 1896: 48). The overbearing animal traits of the hybrid, however, force Prendick to identity it as an "animal-man" (Wells 1896: 49) rather than a man-animal.[ii] This reminds us once again of the mental anguish Prendick is undergoing as he tries to fix in his mind the strange world of Moreau's that he has entered, a world he eventually admits is a terrible "confusion" (Wells 1896: 42).

Why, we wonder, should the task be so hard for Prendick? First, he cannot accurately categorize M'ling or the three "men" who helped unload the schooner. Prendick presupposes that the creatures are vivisected men rather than vivisected animals. But as Batchelor (1985: 19) suggests, we know before Prendick does that the hybrids are not men transformed into beasts but beasts transformed into men. In chapter 7, Prendick seems to think the animals were first men but he only sees in chapter 14 that the creatures were in fact animals from the start. They are, as Moreau puts it, "humanized animals – triumphs of vivisection" (Wells 1896: 77) although what he means by vivisection is questionable. In general, vivisection is "the performance of surgical procedures upon living animals for purposes of research" (*Dorland's* 1994: 1835). However, the term was used with increasing frequency in the later half of the 19th century (*OED Online*), which probably correlates with the advanced development of the technique in scientific practice. As for Moreau, his understanding of vivisection surpasses the simple definition of merely cutting up living animals. However, this is not how Prendick understands vivisection and his confusion thus results from his misunderstanding.

To return to Prendick's categories, his initial attempt to come to terms with what he sees in the novel involves conceptually extending his category of the human being.[iii] To say therefore, as Richard Costa does (1967: 36), that "Despite semi-human appearance, they [the islanders] are unmistakably jungle creatures," is to ignore Prendick's pained attempts to categorize the hybrids. Likewise, when Montgomery refers to them as "curiosities" (Wells 1896: 53) and to the Leopard Man as a "bogle" (Wells

1896: 54) – that is, a specter – he does little to help Prendick reshape his categories. The result? As long as Prendick's categories are under conceptual pressure, his emotional state is turbulent. His conviction that the puma undergoing vivisection "was a human being in torment" (Wells 1896: 55) is one of the best instances of Prendick's profound confusion although Moreau later tells Prendick bluntly that his is a "confounded imagination" (Wells 1896: 75). It is "confounded" precisely because Moreau and Prendick are using different input spaces for their blends.

Eventually, Prendick's old categories break down in two ways. First, when Moreau informs him that the hybrids are "humanized animals" (Wells 1896: 77) and that his true task is "man-making" (Wells 1896: 79), Prendick slowly begins thinking of the hybrids as animals first and foremost. Earlier, of course, Prendick had assumed that Moreau was endlessly "animalizing these men" (Wells 1896: 65), but after Moreau's explanation Prendick tells us: "That these man-like creatures were in truth only bestial monsters, mere grotesque travesties of men, filled me with a vague uncertainty of their possibilities which was far worse than any definite fear" (Wells 1896: 87). At this point, he seems to accept the hybrids by distinguishing them from humans. Unlike humans, they are victims of "Fixed Ideas [...] which absolutely bounded their imaginations" (Wells 1896: 87). In contrast, Prendick's human imagination shows more flexibility as he begins to conceptualize the creatures as blends of a sort he has never before seen. His eye, as he puts it, eventually "became habituated to their forms" (Wells 1896: 89) because he can now successfully conceptually integrate.

Second, Prendick's terms for the hybrids reflect a categorical shift. A short catalogue of the Beast People that Prendick meets throughout the novel would include the following: the Hyena-Swine, the Horse-Rhinoceros, the Ape Man, the Dog Man (i.e. the Saint Bernard Dog Man), the Bear-Bull, the three Bull Men, the Leopard Man, the Satyr, the three Swine Men and the Swine Woman, the Fox-Bear Woman or Witch, two Wolf Women, a Wolf-Bear, an Ox-Boar Man, and the Sayer of the Law – a "Silvery Hairy Man" (Wells 1896: 90) and a "Hairy Grey Thing" (Wells 1896: 112) that is part "Skye terrier" and part "deer" albeit with a "hoof" akin to "claws" (Wells 1896: 66). Even though Prendick refers to some of them as "monstrosities" or things that "resemble nothing but the denizens of our wildest dreams" (Wells 1896: 98), he does think that some of them are "almost human" (Wells 1896: 98). Nevertheless, Prendick's new ability to name the Beast Folk suggests they make him less uncomfortable than before. Only the puma, which seems to him to be "not human, not animal, but hellish" (Wells 1896: 107), constantly evades his capacity to define it. As Prendick categorizes anew the Beast People, his mind and his emotions settle down. For example, his fear of facing the hybrids alone near the end of the novel is provoked more by what the Hyena-Swine *does* rather than what the Hyena-Swine *is*. This is different from his initial encounters on the island earlier in the novel.

And yet, we might ask, how is it that he makes sense of these hybrids when the pigs, dogs, bears, wolves, apes, leopards and others that he sees are never really what they seem? Prendick's solution to this crisis is to begin forming conceptual blends. Conceptual blending is precisely what Prendick engages in as his mind takes in, transforms, and redefines the hybrids he observes on Moreau's island. Those hybrids become possible in his imagination because of conceptual blending. His initially sharp emotional reactions eventually wane as his ability to blend helps him overcome the limits of his imagination. This perhaps is to be expected in a novel "dominated by the theory of evolution" (Batchelor 1985: 17) since one thing

Wells tells us here is that the human mind is adaptable to novel environments (even if adaptation takes time).

The best evidence of conceptual blending in the novel can be found in Prendick's names for the hybrids. For instance, the Ape Man or the Dog Man or the Bull Men or the Swine Men are all conceptualized as types of *men*. The adjectives that modify these names indicate what traits the "men" have. In this sense, Prendick has not fully relinquished his category of the human here because it still proves to be powerfully heuristic for him. But where Prendick's blends show strains are instances where a hybrid is named by a hyphenated term. That is, the difference in his mind between the Dog Man and the Hyena-Swine is a categorical one. The Dog Man would seem to him to be a kind of a man whereas the other creature seems to be equally a hyena and a swine. In short, the hyphenated terms suggest that the conceptual blend for certain characters has not yet been fully formed in Prendick's mind. If the opposite were true, then we would expect different names from those that he uses. Having said that, because the hybrids are indeed hybrids and are very different from each other, simple names cannot really apply to them accurately. Prendick near the end of the novel knows this when he says that "Moreau had blended this with animal with that" (Wells 1896: 134) in his experiments. But if certain traits did seem more dominant than others in a given hybrid, then we would expect Prendick to invent more precise names than, for example, "Wolf-Bear," in his descriptions.

Some of this confusion no doubt returns to haunt Prendick after he reaches home. Back in England, Prendick is deeply troubled. This is because man's "animal nature will never escape his memory" (Costa 1967: 39). Why? He finds in the faces that he meets on the street much of what he saw in the faces of the island's hybrids. As Costa (1967: 39) writes of

Prendick, "The island assumes its allegorical identity in his mind; it is the world where the brute in man is covered by the flimsiest of façades." What Costa means here is that to divide the organic world into only two realms (i.e. plant and animal) forces us into categorizing humans as animals. That Prendick's pessimism about man at the end of the novel reveals this pigeonhole is therefore not surprising. Additionally, the "façades" Costa refers to might very well be the names for the hybrids that Prendick gives them in the novel. If naming is a form of categorizing, a form of knowing and blending as it were, then Prendick's labeling acts are all about understanding what or who the hybrids on the island are. However, as Costa senses, those names might ultimately fail to serve their epistemological purposes. But Prendick is not alone in his attempt to adapt his imagination to the world he experiences. As Batchelor (1985: 19) notes, "Prendick's close attentiveness to physiognomy is a requirement of the narrative method, since the reader collaborates with him in interpreting the nightmare appearance of the creatures on the island." By collaboration, Batchelor means that like Prendick we too run our own conceptual blends when coming to terms with the hybrids that Prendick – and finally Wells – describes for us throughout the novel. The extent to which some of the names fit while others do not fuels Prendick's violent emotional reactions to the creatures. Should they have proven easy to define, the terrific psychological tension in the novel would be halved to say the very least. However, because the hybrids as blends turn out to be the opposite, we can see how conceptual integration explains not only the way that Prendick thinks, but also how he feels.

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Notes

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[i] Related gambling metaphors appear on the BBC's Gene Stories website where one can read about "Gambling on Genes" and "Life is a Lottery." For more please see www.bbc.co.uk/science/genes

[ii] For more on how nouns function as adjectives in blends, please see Turner (1998).

[iii] For more on categorization, please see Rosch (1978) and Rosch and Mervis (1981).

Material Anchors for Conceptual Blends

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Abstract

Conceptual blending relies on three fundamental representational processes, selective mapping of structure from input spaces to a blended space, making inferences by completing projected structure in the blend, and manipulating structure in the blend. All of these processes require some degree of representational stability. There are two principal ways to achieve stability in conceptual models. First, the conceptual models that anthropologists call "cultural" models achieve representational stability via a combination of intrapersonal and interpersonal processes. Second, projecting material structure into a blended space can stabilize the conceptual blend. I call an input space from which material structure is projected into a blend a 'material anchor' for the blend. The term material anchor is meant to emphasize the stabilizing role of the material structure. In this paper, I will present and discuss a number of examples of materially anchored blends, which depend to different degrees on material structure. Materially anchored blends vary on a number of complexly related dimensions. These dimensions include the extent to which the blend relies on the presence of material structure in the perceptual field, the complexity of the material structure, and whether the material structure was designed to support the blend or is used opportunistically.

The problem of conceptual stability

Conceptual integration processes sometimes involve complex manipulations of conceptual structure. Fauconnier (1997) describes the essence of the process as follows: A conceptual blend operates in two Input mental spaces to yield a third space, the blend. The blend inherits partial structure from the input spaces and has emergent structure of its own. The emergent structure arises in three interrelated ways:

input spaces and has emergent structure of its own. The emergent structure arises in three interrelated ways:

Composition: Taken together, the projections from the inputs make new relations available that did not exist in the separate inputs.

Completion: Knowledge of background frames, cognitive and cultural models, allows the composite structure projected into the blend from the inputs to be viewed as part of a larger self-contained structure in the blend. The pattern in the blend triggered by the inherited structures is "completed" into the larger, emergent structure.

Elaboration: The structure in the blend can then be elaborated. This is "running the blend." It consists in cognitive work performed within the blend, according to its own emergent logic.

Notice that each of these processes requires that conceptual structure be represented in a way that allows some parts of the representation to be manipulated, while other parts remain stable. The stability of the representations is a necessary feature of the conceptual integration process, but it is often taken for granted. The need for representational stability becomes more visible in circumstances where the necessary stability is not present.

Culturally Based Reasoning

The famous four-card task, originally developed by Wason (1966), triggered a large number of follow-up studies. Of these, one clearly showed the role of a cultural heritage of mental models in the abilities of individuals to reason correctly. D'Andrade (1989) considered a number of logical isomorphs consisting of a premise in the form of an 'if-then' statement followed by an observation and a set of potential conclusions. For example,

If x is true then y is true. (premise)
We know that y is not true. (observation)
∴ It is the case that x is true. (conclusion)
∴ We can't know if x is true or not. (conclusion)
∴ It is the case that x is not true. (conclusion)

This example illustrates an abstract premise. What is important about this premise from D'Andrade's perspective is that it is not culturally coherent. That is, the subject's culture has nothing in particular to say about the relationship between x and y. Contrast this with a culturally coherent isomorph:

If this is a garnet, then it is a semi-precious stone. (premise)
This is not a semi-precious stone. (observation)
∴ This is a garnet. (conclusion)
∴ We can't know if this is a garnet or not. (conclusion)
∴ This is not a garnet. (conclusion)

In a series of experiments, D'Andrade showed that university students can do logic problems when the problem is expressed in terms of a culturally coherent mental schema. D'Andrade hypothesized that the ability to reason correctly with culturally coherent materials is due to the stability of the representation of the premises. Performing the modus tollens inference, as illustrated in the two examples above, requires the subject to make two shifts in perspective. First from the "x" case to the "y" case, and then from the "y" case to the "not y" case. It appears that premises that lack cultural coherence cannot be held stably in memory while the transformations required to make the inferences are performed.

D'Andrade's study indicates that one way to establish the stability of representation required to support rational inference is to make use of cultural models. Because they are shared, cultural models tend to be supported and reinforced by the behavior and thinking of others. Cultural models are also systematic in the sense that they exist in a complex nexus of models that mutually constrain one another. Most cultural models are closely related to many other models. This interlinking contributes to the conservatism of cultural beliefs over time and to the stability of cultural models as resources for individual and group reasoning processes.

Material Anchors for Conceptual Blends

There is another way to achieve stability in cultural models. Cultural models are not only ideas that reside inside minds, they are often also embodied in physical artifacts. Over the years I have collected a number of examples of thinking strategies that involve the interaction of mental structure and material structure. I only recently realized that the conceptual blending framework provides a means of understanding these examples as members of a larger class of cognitive phenomena. The theory of conceptual blending and mental spaces deals with abstract models of the kinds we usually think of as mental models. The organization of the models supports various inferences. The key thing here is the way in which two or more spaces are blended together. Various elements of the input spaces are selectively mapped to the blended space. In the blended space, new inferences are possible. In fact some new inferences become automatic. In most treatments of conceptual integration, all input spaces are strictly mental constructs. In this paper I would like to explore the possibilities that arise when some or all of the structure contributed by one or more of the input spaces has material form.

Key properties of material anchors for conceptual blends

Consider a blend in which one input space is a conceptual domain consisting of conceptual elements and relations (a space), and the other input is a structured configuration of material elements. As is the case with all blends, cross-space mappings between conceptual and material elements link the two spaces and selective projection from the inputs into the blended space give rise to emergent properties. One of the most important emergent properties of such blends can be the stabilization of the representation of conceptual relations. A mental space is blended with a material structure that is sufficiently immutable to hold the conceptual relationships fixed while other operations are performed. In some cases, the conceptual structures to be represented and manipulated are so complex that they cannot possibly be given stable representation using mental resources alone. In order to produce and manipulate a stable representation of the conceptual elements involved in such computations, the elements must be somehow held (or anchored) in place. The holding in place is accomplished by mapping the conceptual elements onto a relatively stable material structure. This is how a material medium becomes an anchor for a conceptual blend.

A structure is not a material anchor because of some intrinsic quality, but because of the way it is used. It might be better to ask under what conditions something is a material anchor than to ask whether it is a material anchor. If conceptual elements are mapped onto a material pattern in such a way that the relationships among the material elements are taken as proxies (consciously or unconsciously) for relationships among conceptual elements, then the material pattern is acting as a material anchor. The conceptual relationships that are mapped into material structure range from the minimum case of individuation (this element is distinguishable from all others) to extremely complex systems of relationships (the periodic table, for example).

Examples

To illustrate the roles of mental and material structure in thinking I will focus first on a set of examples that involve the coordination of spatial and temporal structure. Some of the examples come from mundane activities while others (the more complex ones) have developed in and are used in culturally elaborated contexts. In what follows, I will begin with blends that are mostly mental and gradually work toward blends that involve more material resources.

As cases involving more and more material structure are considered, I will show how the use of input spaces that contain material structure can create conceptual blends that permit people to do some astonishing thinking while using fairly simple internal cognitive processes. From an anthropological perspective, I believe that the sorts of processes I describe here are absolutely essential to an understanding of the nature of human cognitive accomplishment. The techniques of blending conceptual and material structure change the ratio of cognitive effort to computational accomplishment. Depending on the environment in which they are deployed, they may either produce increased intellectual accomplishment with high effort or steady output with considerably less effort.

Fictive Motion

Fictive Motion (Fauconnier, 1997; Langacker, 1987; Talmy, 1996) is a form of conceptual blend. Consider the sentence, "The fence runs all the way down to the river." In this construction, an input space containing a static scene of a fence and a river is blended with an input space that contributes a moving trajector on a path with a reference point. The moving trajector contributes a shape of motion (movement down a hill to the edge of a river) along the relevant dimension of the static object (the length of the fence). Fauconnier (1997) notes:

> This is a remarkable mode of expression: It conveys motion and immobility at the same time. Objective immobility is expressed along with perceptual or conceptual motion (the conceptualizer's gaze, mental scanning, or structure projection).

In the blended space, the fence extends down to the river via fictive motion. A set of correspondences between the features of the shape of the fence and the shape of the motion has been established. Fictive motion blends the shape of a movement through space with the spatial shape of an object to produce a temporal sequence of attention to the shape of the object. In the presence of the object, it guides the perceiver's attention. In the absence of the object, it constructs the shape of the object by giving shape to the conceptualizer's mental scan.

Method of Loci

The method of loci provides a well-known example of the cognitive use of material structure. In order to remember a long sequence of ideas, one associates the ideas, in order, with a set of landmarks in the physical environment in which the items will have to be remembered. The method of loci sets up a simple trajectory of attention across a set of features or landmarks of the environment. One may establish a flow through the environment that brings attention to the landmarks in a particular order. This is a layered blend.

The initial input spaces are the shape of the motion of a trajector and the set of landmarks in the environment. Together these produce a blend that is the sequential flow through the landmarks in the environment. The sequential relations of the landmarks are an emergent property of the blend. This space then becomes an input space for a more complex blend. The items to be remembered are associated with the landmarks producing a space in which the items to be remembered are imagined to be co-located with their corresponding landmarks. In this blended space, the items to be remembered acquire the sequential relations that were created among the landmarks. These sequential relations among the items to be remembered is an emergent property of this compound blended space. Like fictive motion, the method of loci blends the shape of a motion of a trajector with objects. In this case, the objects are real rather than imaginary.

The method of loci makes opportunistic use of space. The spatial relations of the landmarks do not contribute any of the semantics of the problem. But the landmarks themselves do provide memory cues, and the sequential relations among the landmarks, that were created by mapping a particular shape of motion onto them, is inherited by the set of items to be remembered. As was the case in fictive motion, a blend of a shape of motion with the spatial extent of a set of objects produces temporal ordering among the objects.

Similar strategies are used in many activities where it is important to do a series of actions in order, making sure each action is done once and only once. Pilots inspecting their airplanes before flight follow a simple trajectory around the airplane. The shape of the motion imposes a set of sequential relations on the items to be checked. The cognitive problem that is solved is one of the sequential control of action to produce an action set that is exhaustive and non-repetitive.

The Intelligent Use of Space

Fictive motion maps a shape of motion of an imagined trajector onto an imagined object and thereby gives the object shape. In the method of loci, a shape of motion is mapped onto real objects in space to produce sequential relations among those objects. A simple strategy for the disassembly and re-assembly of mechanical devices places real objects in space in such a way that a simple shape of motion will produce a sequential ordering on the objects. Kirsh (1995) describes this technique. During disassembly, as parts are removed from a device, they are placed in order in a line on the assembly space. To reassemble the device, the parts are taken off the line in the reverse direction. This reversal of direction reverses the sequential relations of the parts.

An even more mundane example of mapping sequence onto space is standing in line or queuing. This cultural practice creates a spatial memory for the order of arrival of clients. The participants use their own bodies and the locations of their bodies in space to encode order relations. The advantage of the line, over standing in some other configuration, is that a very simple shape of motion of a trajector applied to the line can map the spatial structure of the line into temporal structure. The practice of standing in line fits into an ecology of other practices that make up a "first-come-first-served" cultural model of service.

The blending of conceptual structure with space to create meaningful regions of space is an absolutely ubiquitous process. It appears in activities as varied as respecting personal space to reading gauges and dials (see below).

Japanese hand calendar

Nakahara (1996) describes a visualization technique used by Japanese students to compute the day of the week of any day in the year. The problem to be solved here concerns the coordination of the weekly cycle of seven day names with the monthly cycles of 28 (29 in the case of a leap year), 30, or 31 days. The computation is accomplished by mapping the cycle of day names and the cycle of month names onto a common structure. A variety of structures might serve this purpose, but the one chosen by Japanese students, who may need to use the technique during exams, is a set of regions on the first three fingers of the left hand. The mapping of month names onto these regions is invariant (see figure 1). This mapping is taught as a sequence of motions of the left thumb over the regions of the fingers.

Since the week is seven days long, in any month all of the days that have numbers that are 0 modulo 7 will fall on the same day of the week. For example, in 2002, the 7th, the 14th, the 21st, and the 28th of August all fall on Wednesday.

The names of the days of the week can be mapped onto the same structure using the top-to-bottom and left-to-right pattern shown. The intersection of this pattern of mapping day names with the pattern for mapping month names produces a complete set of correspondences between day names and months that captures the effect of the varying lengths of months. Figure 1 shows the arrangement for 2002. The correspondences of day names and month names change from year to year. To determine the day of the week of an arbitrary date in 2002, say August 23, one simply looks at the hand - while imagining the month and day names - and finds the cell containing the month name. The day name in that cell is "Wednesday". This means that all of the Wednesdays in August of 2002 fall on dates that are 0 modulo 7. Thus, the 7th, the 14th, the 21st, and the 28th of August are Wednesdays. Imagine the 21st of August.

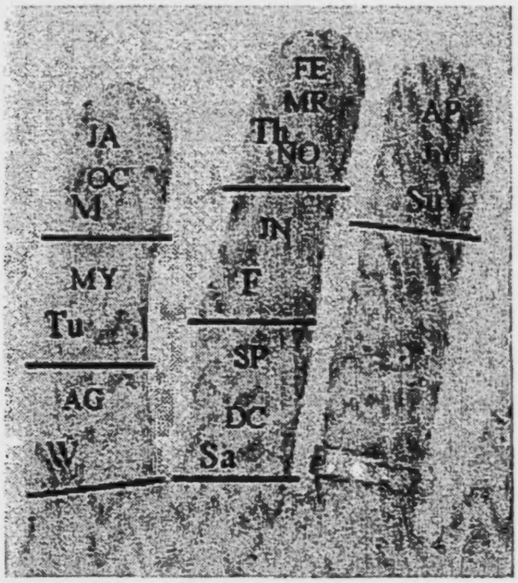

Figure 1. The mappings of day names and month names onto the fingers of the left hand create a blended space on which the day of the week of any date can easily be computed.

It's a trivial computation to determine that that is a Wednesday. The 23rd falls two days later, so one can count forward two days, and determine that the 23rd is a Friday.

Mapping the day and month names onto the hand compose the blended space with its emergent properties - the correspondences between

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day names and months. Locating the landmark date and counting with respect to it are processes that elaborate or "run" the blend. Remember that Fauconnier (1997) said that running the blend, "consists in cognitive work performed within the blend, according to its own emergent logic." The day of the week of any date in the year can easily be determined by simple processes of locating a nearby known landmark and counting up or down to the desired date. Dates such as the 10th or the 25th that have numbers that are 3 or 4 modulo 7 require more counting and memory than dates that are nearer 0 modulo 7. For cases that require much counting, the ability to do the counting on the fingers itself provides a considerable reduction in the memory demands of the task.

This technique makes opportunistic use of the hand as a spatial anchor for the superimposition of two related structures. The hand itself does not provide any of the semantic content of the task. Conventional cultural techniques (for mapping the patterns of month and day names onto the hand) are used to construct the composite image. Additional conventional cultural procedures (finding "0-modulo-7" landmarks and counting) are then applied to the image to compute results in terms of another cultural convention (the day of the week of any date). Without the hand, it would be difficult to represent the relationships between month names and day names with sufficient stability to permit the manipulations involved in running the blend.

Japanese youngsters use this technique to respond to exam questions. The examinations are intended to assess the intellectual abilities of the students. The students appear to have performed complex reasoning, when in fact they have simply done some clever situated seeing. I believe that this general phenomenon is so widespread that much of human intelligence

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relies on "tricks" of this kind. To make that case, let me introduce some more examples.

Micronesian Navigation

Micronesian navigators routinely sail hundreds of miles out of sight of land without the use of charts, tables, or any of the other instruments deemed necessary by Western navigators (Gladwin, 1970; Lewis, 1976; Sarfert, 1911). Instead, they use an elegant system of superimposed mental images (Hutchins, 1983; Hutchins and Hinton, 1984; Hutchins, 1995). The rising and setting points of selected stars anchor these mental images.

The techniques used by Micronesian Navigators are quite complex. It takes many years of study to master the knowledge and skills required to sail with these techniques. Here I can only briefly sketch a technique that is used to express the position of the canoe during a voyage.

For every voyage between two islands, there is another island off to the side of the course, called the *etak* island, that the navigator keeps in mind. Since these navigators do not have charts, they do not think of the voyage in terms of the motion of the canoe between the origin and destination as is so natural for us. Rather they imagine the voyage in terms of the movement of the *etak* island. They know the star bearings between all pairs of islands in their vicinity. This allows them to hold course while sailing to their destination, but it also allows them to imagine that at the beginning of the voyage, the *etak* island will be at the star bearing of the *etak* island from the origin. At the end of the voyage, when the canoe has reached the destination, the *etak* island will be at the bearing of the *etak* island from the destination. Thus, during the voyage, the *etak* island appears to move back along the horizon. In fact, Micronesian navigators say that once out of sight of land they imagine the canoe stationary under the stars while the islands move. The *etak* island is under one star at the beginning of the voyage and under another at the end of the voyage. By superimposing the imagined movement of the *etak* island on the frame of the star bearings, the Micronesian navigator creates a model of the voyage that he can see and manipulate from his point of view on the deck of the canoe. The navigator also knows how long to expect the voyage to take, so he can superimpose temporal landmarks on this image of the movement of the *etak* island as a model of the voyage. As shown in figure 2, this produces a set of correspondences between the location of the canoe (as expressed by the location of the *etak* island) and time. Using this image, the navigator can accurately point to the *etak* island at any time during the voyage.

The input spaces include the star points defined by the rising and setting of stars, the movement of the *etak* island as embodied in the fictive motion of the *etak* island trajector along the horizon, and the temporal landmarks. By blending all of these into a single image, the navigator constructs an analog computer.

This system involves the opportunistic use of material structure as an anchor for the superposition of structure from several input spaces. The model is "run" by imagining the superposition of several kinds of structure thereby producing a blended space in which the ability to infer location from time is an emergent property. The use of this very complex blended space depends on the stability of the representations of metrical relations which would be impossible without the material anchor provided by the star points. Unlike the case of the Japanese hand calendar, the opportunistically used patterns of star points also carries part of the content of the task domain.

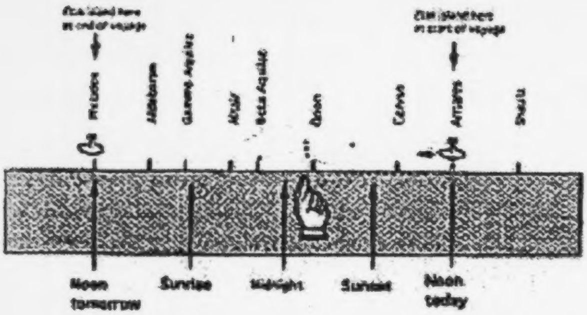
Etak island here at end of voyage
Etak island here at start of voyage
Pleiades
Aldebaran
Gamma Aquilae
Altair
Beta Aquilae
Antares
Shaula
Noon tomorrow
Sunrise
Midnight
Sunset
Noon today

Figure 2 Just before midnight, the navigator points to the *etak* island. All he needs to do is point to the location of the current time on the time scale that is superimposed on the spatial landmarks provided by the star points (From Hutchins, 1995).

The two examples given above involve mental models that are anchored to physical structures that exist in nature independent of the cultural activities that have appropriated them. Sometimes, of course, cultural models are embodied in the physical structure of created artifacts.

Medieval Tide Computer

Frake (1985) describes a medieval tide computer:

> The wind rose is an ancient schema that, for most of its history and in most places had nothing in particular to do with representing knowledge of the tides. It was used, first and foremost as a way to express direction. Secondarily, it was used to express solar time. In whatever manner time was determined at some moment, it was thought of and expressed as a compass bearing. The sun bears south at noon. It was therefore thought of as being north at midnight, east at 6 a.m. and west at 6 p.m. Only the first of these bearings is of any use in northern Europe for determining time. The other bearings were ways of expressing time.

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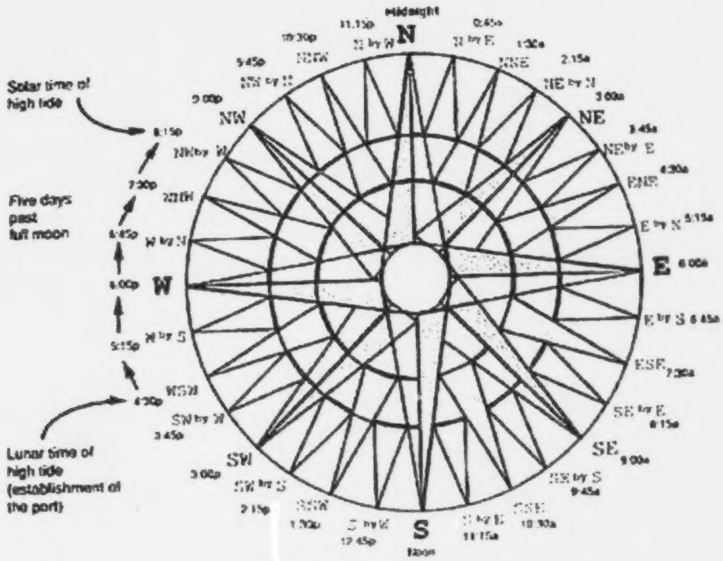
Figure 3 shows the superimposition of two kinds of structure: the temporal structure of the 24-hour solar day on the 32-point compass rose. This yields a set of correspondences between direction and time.

Just as the bearing of the sun is an expression of solar time, the bearing of the moon can likewise be seen as an expression of lunar time. The tides result from the gravitational pulls of both the moon and sun, but the effects of the moon dominate. Although the tide does not simply follow the moon in any obvious manner, the phase of the tide at any particular place is always the same when the moon is at any given bearing. That is, for any particular location, the high tide always comes at a particular lunar time. Medieval mariners referred to the lunar time of the high tide at a particular place as the "establishment of the port." Armed with this knowledge and knowing the phase of the moon, a navigator can easily compute the solar time of high tide in the port.

For example, consider the case where a navigator knows that the tide will be high in a given port when the moon bears WSW. If the moon is new, then solar time and lunar time are the same, and high tide will occur when the sun bears WSW, or 4:30 p.m. If the phase of the moon is other than new or full, the navigator will have to determine the relation of solar time to lunar time. Dividing the 24-hour day into 32 equal parts yields intervals of 45 minutes each. Each day, the moon, and the tide following it, lags behind the sun by about 48 minutes. The sailor can compute the approximate solar time of high tide by counting one point of the compass for each day after the full or new moon.

> It is the relationship between determining direction and determining time that makes the use of a single schema, the compass rose, appropriate for representing both direction and time. But the compass rose is not a time-finding instrument. It is

> a very abstract model, a cognitive schema, of the relations of direction and time, of solar time to lunar time, and of time to tide. It is an *etak* of medieval navigation. (Frake, 1985)


Midnight
N
N by W
N by E
11:15p
0:45a
10:30p
1:30a
NNW
NNE
9:45p
2:15a
NW by N
NE by N
9:00p
3:00a
NW
NE
3:45a
NE by E
4:30a
ENE
E by N
5:15a
E
6:00a
E by S
6:45a
ESE
7:30a
SE by E
8:15a
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9:00a
SE by S
9:45a
SSE
10:30a
S by E
11:15a
S
Noon
S by W
12:45p
SSW
1:30p
SW by S
2:15p
SW
3:00p
SW by W
3:45p
WSW
4:30p
W by S
5:15p
W
6:00p
W by N
6:45p
WNW
7:30p
NW by W
8:15p
Solar time of high tide
Five days past full moon
Lunar time of high tide (establishment of the port)

Figure 3 Computing the tide five days after the new moon for a port with an establishment of WSW.

The use of the medieval compass rose in the prediction of tides is a fine example of the empirical construction of an artifact in the absence of a theory of the phenomenon it permits navigators to predict. In this case, the compass card provides a stable spatial structure onto which conventional techniques of imagining solar times produce a composite image of direction and solar time. Lunar time, which is closely correlated with the tides, is determined by locating a landmark and counting with respect to that landmark.

The utility of the correspondence between the amount of solar time represented by two adjacent points of the compass and the change in the relation of lunar to solar time each day depends on the serendipitous fact that the compass divides the day into 32 equal segments of 45 minutes

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each and the moon lags 1/29th of a day (or about 48 minutes) behind the sun each day. As was the case with the Japanese hand calculator, the computation is done and the blend is "run" in this system by locating a convenient landmark (the establishment of the port) and counting days before or after the full or new moon with respect to that landmark. Again, the memory loads can be reduced by first selectively mapping from the input spaces to locate the landmark, then performing the counting operations on the physical structure, and finally selectively mapping from the input spaces again to identify the relevant properties of the location identified by the counting operation. The representations involved here are too complex to hold stable in memory while running the blend.

These examples are from somewhat exotic domains. It would be nice to think that I found these examples in the world of navigation mostly because I know navigation so well and have thought about it for a long time, not because navigation is in some way different from other human activities. The fact is, however, that navigation is different in the sense that it is a high-stakes activity and the value of finding and saving reliable regularities in the task environment is greater in this domain than in many others. Other high-stakes activities show similar cultural developments. Of course these activities are more representative of everyday human cognition than most laboratory experiments are. The special nature of these tasks still raises the question of the extent to which these examples are representative of the role of material anchors for conceptual blends in everyday life. To address this, let us turn to one of the most widely used artifacts of modern life, the clock.

Clocks, Dials, and Sliderule

There is an obvious link between the medieval tide computation and the clock face. The compass rose with times on it is a full sibling to the sundial and the sundial is a direct ancestor of the clock. Both the compass-rose-mapped-with- time and the sundial are blends of the time-line with the direction frame. One is adapted to the ecology of maritime models and the other to the cognitive ecology of landlubbers. Reading a clock is a process of running a very complex nested conceptual blend. It is possible to decompose the clock face all the way back to gnomon and number line, but of course, it is not necessary to know this decomposition or the history that resulted in the layered composition of spaces that make up the clock face in order to read the clock.

The strategy of mapping numbers onto a circular line is common in dials and instruments of many kinds. This is especially apt when the numbers represent a quantity with periodic expression such as time. These instruments rely on a stable anchor (with dynamic moving parts) onto which images of conventional structure are mapped to compose a complex blend. The movement of an imagined trajector gives meaning to the momentarily stationary watch hands, which "go around" to use a fictive motion description, but the actual movement of the hands is necessary to the operation of the device since we are not able to imagine the velocity of movement of the hands with any accuracy.

As a final example of a conceptual blend with material anchors, consider the sliderule. In a sliderule, the abstract quantity logarithm of number is mapped onto an extent of space. Two such spaces lying next to each other make it easy to add together the extents of space corresponding to the logarithms of two numbers. Since the addition of logarithms is an implementation of multiplication, the extent of space corresponding to the sum of the extents of space of the logarithms of the two numbers corresponds to the logarithm of the product of the numbers. The input spaces in this blend are the two representations of the logarithms of the numbers to be multiplied. The blended space is composed by positioning these two spaces with respect to each other in such a way that the total extent of the sum of the extents of space can be seen. The blend is run by reading the product as a number on the scale at the appropriate place. In this case, a specially designed device is manipulated to form the conceptual blend because it is impossible to imagine these conceptual relations with sufficient stability and precision to run the blend using mental resources alone.

Discussion.

Fauconnier and Turner (2002) devote a chapter to "things" in which they draw upon my work on material anchors. They discuss the clock face, other gauges and the method of loci along the lines I have presented here. They also extend the analysis to graves, headstones, dead people, money, and spoken and written language. Their extension of the material anchors framework to these phenomena is justified by their assumption that material anchors are "objects that prompt for elaborate conceptual integration networks." This broad definition seems to imply that every symbol and sign is a material anchor for a conceptual blend. In the framework developed here symbols appear as the weakest type of material anchor.

Is spoken language a material anchor? Fauconnier and Turner seem to think so, but this claim requires reflection, and a simple yes/no answer misses much of interest here. The minimal informative structure in a material space is individuation – the notion that some material element is different from or distinguishable from other elements. Taking a word (as a material form either spoken or written) by itself as a material anchor involves this sort of simple mapping. The conceptual space is the lexical contrast set for the word, the other words that might have occurred, but did not. This conceptual space is mapped into the material anchor of the word as a pattern of sound or of written shape. Since symbols typically have arbitrary relations to the things they denote, the material structure provides only the perceptual identity of the physical form as distinct from other physical forms. Thus, a word **can** be seen as a material anchor for a conceptual blend, but the contribution of the material medium to the blended space is minimal.

Linguistic units larger than the word may make use of more interesting material structure. Grammatical forms, such as agreements between modifiers and modifieds, between predicates and subjects, and between functions and arguments, may rely on a greater contribution of the material form. The conceptual relation of modifier to modified, for example, is mapped into the physical structure of word order in many languages. Of course, this conceptual relation may also be supported by other structure such as lexical or morphological cues.

Still, it may make more sense to say that the temporal or spatial organization of a spoken or written sentence can be a material anchor for some portion of the grammatical conceptual structure, than it does to say that a word is a material anchor for the concept it represents. This is because in the case of grammar, more complex aspects of the material organization are involved. No doubt the fact that spoken language has material form was important in the development of language, as the material forms provided anchors for concepts and conceptual relations.

In a recent note, Brandt (n.d.) discussed the notion of the compass as a material anchor. Brandt emphasized the role of the compass needle as a probe that brings information from the "hidden side of reality" to "our side of reality". Focussing on the compass needle and jumping to the interpretation of the compass system as a probe presupposes, and thereby overlooks, the process that I had hoped to highlight with the phrase, "material anchor." From the point of view of material anchors, the compass rose, and not the compass needle, is where the action is. The complex set of spatial relations among the directions (however the frame is conceptualized, e.g., points of the compass, degrees, etc.) cannot be stably maintained and operated upon in a purely mental representation. In order to produce and manipulate a stable representation of the conceptual elements involved in reasoning about directions, the elements must be somehow held (or anchored) in place. This holding-in-place is accomplished by mapping the conceptual elements onto a relatively stable material structure, the compass rose.

The focus on the compass needle rather than the compass rose lead Brandt to assert that "'Material anchors' are signs, and their meanings may all be understood by similar analyses." (Brandt, n.d.) While this does seem to be consistent with the interpretation that Fauconnier and Turner have given the phrase 'material anchors', I do not use it this way. Because a sign is a pattern in a material medium that captures a minimal aspect of the conceptual domain, a sign is a very weak form of material anchor.

Conceptual models embody/express/hold constraints among conceptual elements. In order to play a role in reasoning, a conceptual model must be cognitively stable. That is, it must maintain its system of constraints while being subjected to mental (or physical) manipulation. The stability of some conceptual models is provided by their simplicity. Very simple trajectories of attention are easy to remember and apply. The stability of more complex conceptual models is sometimes provided by their being embedded in conventional (culturally shared) well-learned and automatically applied internal mental structure. A conceptual model with these properties is a cultural model. With enough practice, support, and motivation, even complex and nearly arbitrary mappings can be learned. In a system of cultural models, each model constrains and is constrained by a rich network of relations to other models in the cultural belief system. It is possible to reason efficiently about complex problems when they are expressed in terms of cultural models. Other conceptual models achieve stability by virtue of being embodied in an external physical medium. Problems that are too complex to hold in mind as a cultural model, and possibly some that are too complex to express at all in internal conceptual models, can be expressed and manipulated in external media.

The examples presented in this paper illustrate a continuum of cases from those in which external media provide little or no structure of the model to those in which virtually all aspects of the conceptual model are embodied in the structure of external media and the cognitive operations performed on the model are implemented as physical manipulation of external structure. The principal cognitive effect of using conceptual models is achieved by building the constraints of the task into the constraints of the representations. This is true whether the representation is entirely a mental image or if it is embodied somehow in physical form.

In the first examples, method of loci, intelligent use of space, and the Japanese hand calendar, the contribution of the material medium is only a set of stable spatial landmarks onto which image structure can be attached and held. Next comes Micronesian navigation, in which the physical structure of the rising and setting points of stars provides a set of landmarks that are themselves task relevant content. The environmental structure used by the Micronesian navigators is not designed for the task. It exists independently of this activity, but it becomes “artifactual" by virtue of the conceptual relationships that the navigators establish between it and other task elements. The star points are opportunistically used natural structure. The compass rose, as exploited by medieval seafarers to reckon the tides is opportunistically used artifactual structure. It was created by seafarers, but not originally created for this use. Finally, there are cases where the structure is designed for particular problems.

Along this continuum, as the nature of the structure of the conceptual models changes from strictly mental representations to more external structure, the kinds of cognitive processes that are involved in "running the blend" also change. In simple cases, it may be possible to perform a cognitive task, say an inference, with these representations simply by imagining the superimposition of elements of structure. In more complex cases, the fact that some of the task relevant structure is crystallized in a material artifact may reduce the demands on memory. Computing on complex mental images that have material anchors permits people to substitute robust and fast perceptual processes for slow and vulnerable conceptual processes. Since conceptual models work by embodying constraints among conceptual elements, both memory and processing loads can be reduced if the constraints of the task can be built into the physical structure of a material device.

In some cases it is possible to do the cognitive work by imagining the manipulation of a physical structure. In others, the case of the sliderule for example, it is necessary to manipulate the physical device itself because it is not possible to imagine it accurately enough to be of use. The cultural process of crystallizing conceptual models in material structure and saving those up through time puts modern humans in a world where thinking depends in significant measure on the availability of a set of physical structures that can be manipulated in this way.

A final turn on this path is that when a material structure becomes very familiar, it may be possible to imagine the material structure when it is not present in the environment. It is even possible to imagine systematic transformations applied to such a representation. This happened historically with the development of mathematical and logical symbol systems in our own cultural tradition. Unfortunately, much of cognitive science is based on the mistaken view that this relatively recent cultural invention is the fundamental architecture of cognition (Hutchins, 1995). The very idea of rationality, as held by game-theorists, economists, and political scientists, is a cultural construct that owes its existence to the ability to create a certain class of materially anchored conceptual blends. It is a mistake to assume that thinking is, in general, a symbol manipulation process.

Which came first, the purely internal models or the materially embodied models? My guess is that a process like the blending of a simple trajector with a static object (as is seen in fictive motion) is an extremely old cognitive strategy. Wynn (1989) examined stone tools going back several millions of years. He describes an innovation that arose about a million years ago. Tool makers before that could strike a stone repeatedly in nearly the same place. At that time, they began striking a stone a sequence of blows, each one a little further along the stone than the last. This looks like an operational version of the projection of a simple trajector onto the activity of chipping stones. Might this materially anchored activity have been a precursor to the ability to form simple internal blends? As is the case today, it must have been true in the past that people were capable of conceptual feats supported by material anchors that could not be undertaken using mental resources alone. In the past two decades, speculations on the intelligence have given more emphasis to the demands of social reasoning than to tool making. Perhaps viewing conceptual models in this way will revive the importance of the tool-making heritage. In any case, it seems likely to me that patterns of interaction with emergent regularities in the material and social environment provide the basis for whatever truly internal conceptual skills we have.

It is also important to stress the systematicity of the models presented in this paper. This is not simply a set of isolated examples of clever cognitive strategies. Rather, the models presented here are elements of whole systems of conceptual blends that have accumulated and been layered, one over the other, to produce complex emergent properties. Of course, it is not necessary for the users of these tools to know the history of the tool any more than it is necessary for us to know the history of the blends that we find in language.

Each of the examples presented here is part of a larger cognitive ecology and a system of cultural models. The examples are also unified by the fact that each also illustrates the operation of the cognitive processes known as conceptual blending. Conceptual blending has previously been seen as an entirely internal cognitive process. I have tried to show in this paper that the same kinds of processes operate in situations where one or more of the input spaces to the blend contain material structure. This unification is important because it provides an antidote to the false dichotomy that has recently been placed between the study of conceptual models and the study of material resources for thinking.

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Primary Metaphor and the Fantastic

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Abstract

Preliminary findings in our analysis of several works in the fantasy genre demonstrate that primary metaphors such as Actions Are Self-Propelled Motions, Control Is Up (Grady 1997) can be predictably manipulated to create fantastic elements. We argue that writers of fantasy literature for children switch (or alter) source domain content to create fantastic elements in the blend. For example, the child first acquires the primary metaphor Important Is Big through the body-based understanding of her environment. In the sensorimotor domain of Size, the child learns through motor interaction and basic-level experience that Big is vital and essential (e.g., Caregivers are big; food givers are big). To appeal to the child reader, however, the fantasy writer plays on the child's body-based understanding of Important Is Big, but does so by replacing the source input of Big with Small (a source domain the child knows quite well); thus, the "fantastic" primary metaphor or emergent structure becomes Small Is Important. Various writers reveal access to primary metaphor cross-domains (e.g., with Alice in *Through the Looking Glass*, the asteroids' size in *The Little Prince*). This analysis shows that the fantastic stems not randomly from the imagination, but systematically and in conjunction with primary metaphor.

Introduction

Fauconnier and Turner, in *The Way We Think* (2002: 83), consider how in touch we might be with the process of blending:

> How thoroughly our conscious apprehension is limited to the blend depends on the kind of activity that blending serves. In the case of sensation and perception, our conscious experience comes entirely from the blend -- we "live in the blend," so to speak.

For certain activities we are inclined to blend and fantasy literature, with its endlessly nested blends, is one of those activities. Counterfactuals such as those that abound in fantasy call attention to particular aspects of experience and perception (Coulson 2001). Perception is crucial to survival (Fauconnier &Turner 2002: 84). Thus, it is no surprise that fantasy literature for children is characterized by various ways of encouraging children "to see," to be aware, indeed, to be aware of awareness. Fantasy literature is cleverly disguised boot camp, preparing children to survive.

In this paper, we argue that fantasy literature for children tends to be grounded in a few key primary metaphors and that children's fantasy assumes a close level to experiential motivation, or grounding. Infants and young children acquire primary metaphor by "just going about the world constantly moving and perceiving" (Lakoff & Johnson 1999: 57).

Table 1, "Key Primary Metaphors in Children's Fantasy Literature," exhibits the components and motivations of primary metaphor. The source concepts for the primary metaphors involve content associated with physical perception and sensation, whereas the target concepts lack sensory and image content (Grady 1997).

That an adult can consciously apprehend elements of primary metaphor in the blend is supported by Seitz (2001: 14), who suggests that "...adult creativity necessarily draws on both early metaphor that is innately constrained as well as later developing conceptual or secondary metaphor that relies on formal learning and the rejection of linguistic social, and cultural conventions."

We argue that writers of fantasy literature for children switch (or alter) source domain content to create fantastic elements in the blend. For example, the child first acquires the primary metaphor Important Is Big through the body-based understanding of her environment. In the sensorimotor domain of Size, the child learns through motor interaction and basic-level experience that Big is vital and essential (e.g., Caregivers are big; food givers are big). To appeal to the child reader, however, the fantasy writer plays on the child's body-based understanding of Important Is Big, but does so by replacing the source input of Big with Small (a source domain the child knows quite well); thus, the "fantastic" primary metaphor or emergent structure becomes Small Is Important.

The relations of the protagonists in these works involve awareness and perception of the surroundings. All the works centrally involve some aspect of the sensorimotor domain of Size. In each work, size matters in various ways, but all prepare the protagonists (and the reader) for new perspectives.

Method

Five primary metaphors (Table 1) are key in the children's fantasy literature examined here. They ground the counterfactual blends and occur early in each of the narratives. We will examine passages of three works, Lewis Carroll's *Through the Looking Glass,* Antoine de Saint-Exupery's *The Little Prince,* and Jonathon Swift's *Gulliver's Travels* to see how primary metaphor and blending are connected.

Blending, note Fauconnier and Turner (2001: 25), affords "a great variety of instantiations." The children's fantasy works under analysis here all have many possible critical readings: for Lewis Carroll's Alice, for example, some have read a Freudian dream state, others a Lacanian *jouisssance.* Numerous historical debates exist about the political significance or lack of it in *Gulliver's Travels*. This analysis bypasses these types of "adult" critical readings, under the assumption that a young child does not have the inferencing capabilities of the adult reader and that a child has less background knowledge to make the same type of inferences. For the theory of blending, these assumed adult/child differences are a factor when elaborations in the blend are constrained by varying quantities of background knowledge. (See Coulson 2001).

The passages selected for analysis occur at the beginning of the journeys of each narrative and, in some cases, with a framed journey (journey within a journey). We consider the journey to provide the available background knowledge and contextual structure and to serve as the organizing frame (See Lakoff & Johnson, 1999, on the location version of even-structure metaphor).

Table 1 Key Primary Metaphors in Children's Fantasy Literature

Primary metaphor table adapted from Grady 1997: 281-299. *Sensorimotor domain, subjective judgment, primary experience* information and metaphor short-form in parentheses from Lakoff & Johnson 1999: 50-54.

Metaphor: ACTION IS SELF-PROPELLED MOTION
Sensorimotor Domain: Moving your body through space
Motivation: The correlation between performing actions and moving
Primary Experience: The common action of moving yourself through space, especially in the early years of life
Subjective Judgment: Action

Metaphor: BEING IN CONTROL IS BEING ABOVE (Control Is Up)
Sensorimotor domain: Vertical orientation
Motivation: The correlation between being in a higher physical position and having greater control over objects, people, situations
Primary Experience: Finding it is easier to control another person or exert force on an object from above, where you have gravity working with you
Subjective Judgment: Being in control

Metaphor: SOCIAL STATUS IS VERTICAL ELEVATION
Sensorimotor Domain: Vertical orientation
Motivation: (Corollary BEING IN CONTROL IS BEING ABOVE) And/or the tendency to defer to taller, bigger people.
Primary Experience: Finding it is easier to control another person or exert force on an object from above, where you have gravity working with you
Subjective Judgment: Being in control

Table 1.1 (Continued)

Metaphor: IMPORTANCE IS SIZE/VOLUME (Important Is Big)
Sensorimotor Domain: Size
Motivation: The correlation between mass/weight of objects and the value, threat, difficulty, etc. they represent as we interact with them.
Primary Experience: As a child, finding that big things, e.g., parents, are important and can exert major forces on you and dominate your visual experience
Subjective Judgment: Importance

Metaphor: CATEGORIES/SETS ARE BOUNDED SPATIAL REGIONS (Categories Are Containers)
Primary Experience: Observing that things that go together tend to be in the same bounded region (correlation between common location and common properties, functions, or origins)
Subjective Judgment: Perception of kinds

Table 1 blends Grady's (1997) work on primary metaphor with Lakoff and Johnson's (1999) rendering of it. In the analyses which follow, we refer to the table from time to time. Following convention, the primary metaphor source concept domain appears in the predicate of each metaphor, while the primary target concept domain occurs in subject position.

Applications

In *Through the Looking Glass*, Alice, a young girl, longs to go through the mirror over her living room mantelpiece. Her self-stated purpose is "to see what the looking glass house is like." Thus, the *loci*, or organizing frame for the initial voyage are the principal parts of a western middle class home. There is a living room and some stairs down into a garden. One day, Alice finds herself on the other side of the mirror where things are backwards, where inanimate objects come to life and fantastic creatures talk. Her first interaction on her journey is with the White King and Queen of the chess board. The White Queen, chess-piece size yet completely anthropomorphized, is running and screaming to assist her little child, the White Pawn, who is stuck on her back and can't get up. The White Queen rushes by the King, knocking him into the ashes of the hearth. Anxious to be of use, Alice picks up the White Queen and places her next to her noisy daughter on the table. Then, she picks up a terrorized White King to help him to the table and dusts off the ashes from his little, writhing body.

Let's examine just one of the blends from this first encounter. In the space of Input 1, we find a human queen (Queen). Elements of this space are adult-human, royalty, a certain dignity, and power. In Input 2, we find a chess-board queen (Queen"). Elements of this space are that the Queen" has certain strategic powers in the game of chess and is one of the more important pieces. In Alice's counterfactual blend queen (Queen'), all the power and dignity of a human queen are absent; rather Queen' emerges as undignified and helpless. There is no reason why a chess Queen" come alive should be construed as laughable and simultaneously pamperable (in the way one treats a baby), yet this is Alice's and the reader's response.

Forming part of Input 1 is background knowledge that, conventionally, adults of various social and political ranks hold power. However, in the blend, the child protagonist finds herself in the Status Is Up corollary of Control Is Up. In relation to adults (who are Big), Alice is Small; thus, her control over the Queens and Kings is empowering despite her small size. Similarly, her relative Bigness in the counterfactual blend render her Important, in the non-sensorimotor domain (i.e., subjectively).

Alice's journey through the looking glass is a journey within a journey. Part of it is overlaid on a chess board and game in which Alice plays the White Pawn role and wins in eleven moves. This leg of her journey involves Alice's "movement" across the organizing frame of a country whose topography is that of a chess board. In this passage, Alice converses with the Red Queen, also a "live" chess piece, but a head taller than Alice. Alice, is in the Second Square of the chess board, when she and the Red Queen begin to run hand in hand. The Queen was running very fast and crying "Faster! Faster!" Alice was having quite a difficult time keeping up with the Queen, when she noticed that the trees and all the things around them never moved: "however fast they went, they never seemed to pass anything" (Carroll 1970: 215). The Queen props Alice against a tree under which Alice realizes they have been the entire time. When Alice protests, the Queen replies that where they are "it takes all the running *you* can do to keep in the same place" (Carroll 1970: 216).

In this passage (or non-passage), the source concept domain is moving your body through space and the subjective judgment of this experience is one of performing an action. In Input 1, Alice is running very quickly and hoping to change location; in Input 2, Alice" is running very quickly, but is going nowhere. In the counterfactual blend, she (Alice') is running as fast as she can in order to stay in the same place. The emergent structure is illogical and the looking-glass world is exasperatingly backwards. Of course, when Alice awakes at the end of her journey she finds that she has traveled nowhere. Again, to create the fantasy journey in this case is simply to negate the source concept in primary metaphor. In this instance, Not Moving Your Body Through Space Is subjectively judged as taking yourself on a journey (Self-Propelled Motion).

In *The Little Prince*, an aviator whose plane is forced down in the Sahara Desert meets a young prince from a planet no bigger than a house. The Little Prince relates to the pilot his adventures in seeking the secret of what is important in life. This fantasy work, like Alice *Through the Looking* Glass, is also a journey with multiple journeys within. Interplanetary travel is implied, and never described. Thus, the Little Prince simply appears and takes leave from asteroid to asteroid.

The main character of this work is a child and is royalty. In the world as we know it, it is not impossible to have child princes or princesses; however, in practice, an adult in the royal line would hold the power until the child came of age.

When the two first meet, the Little Prince asks the pilot to draw him a sheep. After many attempts and mostly wanting to repair his downed aircraft, the pilot hurriedly draws a box with three holes in it and tells the boy the sheep is inside. The Little Prince is delighted and the two exchange talk about how large the sheep is and how much grass it can eat until the Little Prince peeks in the box and sees that the counterfactual sheep has gone to sleep.

This meeting with the adult pilot and the child prince occurs significantly at the beginning of the tale. In primary experiences, children begin to establish categories by observing that things that go together tend to be in the same bounded region (correlation between common location and common properties, functions, or origins (see Table 1)). In Input 1 of the sheep in the box, we find a sketched box with three circles on its side. In Input 2, we have a lone sheep. In the counterfactual blend, we have a live lone sheep in a box with breathing holes. What emerges from the blend is a humorous twist on Categories Are Containers, and that somehow the Little Prince knows that categories are bounded by spatial relations. Adding to the humor is the conventional wisdom that sheep tend be thought of in flocks, and are known for their follow-the-group behavior. This variation on the primary metaphor, CATEGORIES ARE BOUNDED SPATIAL REGIONS (Categories Are Containers), is equally important for other stops on the prince's journey.

Prior to arriving on Earth, the Little Prince visited six asteroids, numbers 325, 326, 327, 328, 329, and 330. We find again the organizing frame of the journey, this time in sequential numerical order, as available background and contextual structure. Each of the asteroids the Little Prince visits is roughly the size of a house. Because the asteroids are so small, the number of inhabitants is quite limited; indeed, each of the six asteroids has only one inhabitant. On each asteroid, the Little Prince meets adults who possess various qualities. These qualities do not make any sense without having other people around. For example, on asteroid 325, the boy meets a king who has no subjects; on asteroid 326, he meets a vain man who has no admirers; on the fourth asteroid he meets a business man who has no clients and of course no supply and demand, and so on.

We will consider the blend and its connection to primary metaphor on the first asteroid only, although similar blends result on the other five. As in Alice's fantastic journey, the initial encounter of the child protagonist prince is with a member of royalty, a king. (The Little Prince is royalty as well, but of a lower rank.) On asteroid 325, the Little Prince meets a king sitting on a majestic throne. The asteroid is so small that the prince must move the king's ermine cloak in order to sit down. In the ensuing dialogue, the king insists that he is an absolute monarch, that he rules over everything, and that he will not tolerate disobedience. In Input 1, we have a king who rules over a kingdom with multiple inhabitants, who are his subjects. In Input 2, we have a king (king") living alone on an asteroid. In the counterfactual blend, the monarch (king') has absolute power, yet over nothing and no one. What emerges in the blend is the absurdity of the counterfactual king's sovereignty.

This silliness has the effect of minimizing the king's importance by way of changing the Important Is Big primary metaphor at its source. The difference in scale (Big → Small) in the primary source concept spotlights categories of people in spatial regions. The grounding for this blend is motivated by primary experiences of children, finding that big things are important and can exert major forces on them, dominating their visual experience (See Table 1).

The small size of the asteroid forces our perspective and points to the folly of these adults for being power blind, or vain, or obsessed with ownership, and so on. The smallness of the asteroids compels us to view -- in a different way than we normally do -- the relations of people with other people and with things.

Unlike the first two works examined here, the chief protagonist in *Gulliver's Travels* is an adult. In Book One, "A Voyage to Lilliput," Gulliver awakes to find himself a giant in comparison to the local inhabitants, who, in adulthood, stand a mere fifteen centimeters high. As in the other journeys we have considered, this protagonist's first interactions are with a character of high status, the Emperor of Lilliput. By now, it will be apparent that primary metaphors Important Is Big and Control Is Up are altered in the source domain conceptual content. For, although Gulliver is a giant in Lilliput, he remains under the control of the miniature monarch. Let's examine Gulliver's first meeting with the Lilliputian Imperial Majesty.

In Input 1, we find a human-sized emperor in subject's presence. Elements of this input would be physical distance between the two out of deference to the ruler's high rank. The emperor has power over the subject. In Input 2, we find a tiny emperor in giant subject's presence. The emperor has power over the subject. In the counterfactual blend, the elaboration of this is that a tiny emperor must crawl on Gulliver's leg and up his chest in order to speak with him. The emergent structure is a lack of decorum and dignity on the Emperor's part. This blend is laughable and points to the absurdity of the emperor's high status as well as to Gulliver's lack of control in spite of his immense size. Here we see Control Is Down, Important Is Small, and Social Status Is Small Things Crawling on Your Body.

Gulliver's second voyage is to Brobdingnag, where he discovers that he is miniature and that the Brobdingnagians are relative giants. Gulliver captures the essence of altering primary metaphor when he remarks, "Undoubtedly, philosophers are in the right when they tell us, that nothing is great or little otherwise than by comparison" (Swift 1999: 81). Gulliver is either too large or too small to interact with "things" in a normal way; therefore, interacting with people and things forces a new perspective.

Hundreds of blends and humorous emergent structures result in Gulliver's relations in Brobdingnag. Many of them force a perspective on physicality, the complexion of skin, and on bodily functions.

Conclusions

In this small sample of works in children's fantasy, we have been able to see that a handful of primary metaphors are key in the counterfactual blends of these stories. All the works deal with awareness and perception, and overall it is a change or switch in the sensorimotor domain of Size which obliges emergent meaning in the blends. The protagonists in *Through the Looking Glass* and *The Little Prince* are both children, while Gulliver is an adult who finds himself both big and small. Whether a child finds herself Big in comparison to adults, whether the size of a spatial boundary makes an Important adult seem petty, or whether an adult's giant size gives rise to absurd power relations with miniature authority, all the emergent twists in these blends can be traced back to early experiences in the domain of Size.

Future investigations might examine other fantasy from various countries and cultures of the world to see if the same primary metaphors ground blending and if emergent structure is similar. Future work might also consider relations of fantasy literature in which tiny children, appear whole and mature to their childless parents (e.g., the Grimm Brothers' *Tom Thumb*, Andersen's *Thumbelina*), or in which giants appear. Or, we might investigate how primary metaphor grounds personified and anthropomorphized creatures and inanimate objects in fantasy.

It is somehow comforting to know that wild flights of fancy have a basis in recurring early experiences. Blending in fantasy hones children's perception and awareness of the world(s) around us. "Fantasy" as we have examined it in this paper is true to its etymology:

> Webster's Unabridged: [ME *fantastik* pertaining to imagination <ML *fantastic(us)* variation of LL *phantaticus* <GK *phantastikos*: able to present or show (to the mind), equiv. to *phantaz(ein)* to make visible.

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Analogy: within reality; between reality and language; between mind and language; within language

Esa Itkonen

Motto: "What does the scientific man do who searches for the reason or law embedded in a phenomenon? He deliberately accumulates all the instances he can find which have any analogy to that phenomenon; ... Geniuses are, by common consent, considered to differ from ordinary minds by an unusual development of association by similarity [i.e. analogy]." (William James in 1892)

1. The Definition of Analogy

Analogy is generally defined as 'structural similarity'. At the level of maximum generality, an analogical relationship obtains between two or more 'wholes' or 'systems' each of which has the same number of 'parts'. The relation holding between the parts of a system is that of *contiguity* (or proximity), understood in a sense wide enough to cover both physical and non-physical cases. Thus, a system is a relation of contiguity exemplified by the parts. The (analogical) relation holding between the systems is that of *similarity*. Because systems are relations exemplified by their parts, it follows that analogy is a *second-level* relation, i.e. a relation holding between relations. In analogy, therefore, similarity is more abstract than, because building upon, contiguity. This is precisely why we speak of *structural* (rather than material) similarity. Hesse (1963: 68) provides the example reproduced in Figure 1. The functions served by the different parts (which are left implicit by Hesse) have been added:

	Similarity			*Function*
	BIRD	FISH		
	wings	fins	®	locomotion
Contiguity	lungs	gills	®	getting oxygen
	feathers	scales	®	protection

Fig. 1

SIM

B F

a b c a' b' c'

Fig. 2

The hierarchical relations involved are made even more evident with the aid of a tree diagram: analogy is a two-place relation (= Similarity) between three-place relations (= Bird and Fish); see Figure 2. An alternative, and typographically simpler, formulation is as follows: 'wings : lungs : feathers = fins : gills : scales'. What is similar, is the *relation* between the parts of these systems. The parts themselves, e.g. feathers and scales, need not be — and are not — (materially) similar.

The relation between the parts is based on their respective *functions*; as shown by Figure 1, the functions of wings, lungs, and feathers are the same as, or similar to, those of fins, gills, and scales, respectively. It turns out that, in this particular context, the terms 'structural' and 'functional' are used nearly synonymously. 'Structural similarity' has established itself as the definition of analogy; but we have just seen that what is at issue is really *functional* similarity. This apparent discrepancy may be explained by recalling the general truth that, within the life sciences, structure is based upon, or determined by, function. This also explains, incidentally, why it is nearly impossible in practice to keep 'structuralism' and 'functionalism' apart.

On the other hand, it is clear that, for two systems to be analogous, it is not enough that they share a common overarching function. For instance, a man can be killed either by being hit on the head with a rock or by being put on an electric chair. But this does not mean that a rock and an electric chair are analogous 'systems'; and the reason is, simply, that their respective structures are not divisible into the same number of parts, determined by corresponding subfunctions. To be sure, it is possible to *imagine* that a rock has somehow a structure similar to the structure of an electric chair. But this would be a baseless, and therefore *bad*, analogy. And the reason would be, of course, that the function of being used as a lethal instrument is in no way inherent to a rock.

The type of structural~functional analogy represented by Figure 1 will be considered **prototypical** in this article. On the other hand, it does not cover all possible cases. For instance, let us consider "relativity theory and quantum physics, in both of which patterns of relations have been introduced in close analogy to important equations of classical mechanics" (Nagel 1961: 111). It is clear that the notion of common function does not apply here. The same is true, more generally, of cases of analogy discovered in physics, e.g. the analogy between water waves, sound waves, and light waves.

Let us illustrate, in an anticipatory fashion, the use of analogy in linguistics. According to Sapir (1921: 37), new words and sentences "are being constantly created ... on the analogy of old ones", i.e. "on strictly traditional lines". He exemplifies this idea with two sentences which "fit precisely the same pattern", "differing only in their material trappings". In this case there are no specific names (like 'bird' or 'fish') for the systems, but these are made to refer to themselves (which is like replacing 'bird' by 'wings & lungs & feathers'); see Figure 3.

Similarity

	'The farmer kills the duckling'	'The man takes the chick'
	the farmer	the man
Contiguity	kills	takes
	the duckling	the chick

Fig. 3

The pattern in question is *SVO*. Thus, sentences exemplifying the same pattern or construction are *analogous* to one another. Is the analogy of Figure 3 (meta-)analogous to the functional analogy of Figure 1 or to the merely-formal analogy between, e.g., classical mechanics and relativity theory? As might be expected, the answer to this question depends on one's overall view of language. In conformity with my own functionalist leanings, I espouse the former alternative. That is, I take the structure *SVO*, exemplified by *The farmer kills the duckling*, to have the function of expressing the content 'Agent – Action – Patient', and, in turn, I take this function to have shaped the structure *SVO*.

Just like Sapir (1921), Jespersen (1924: 19) claims that the following sentences are "analogous" or "made after the same pattern": *John gave Mary an apple* and *My uncle lent the joiner five shillings*. The pattern in question is the ditransitive construction *S-V-O1-O2*. That there are indeed analogies between Sapir's as well as Jespersen's twin sentences, cannot be denied. Notice, however, that the constructions which underlie these analogies may be understood and represented in more than one way, depending on the descriptive framework that one adopts. Thus, the mere existence of analogy does not dictate how the analogous entities should be described. It might be said that in this respect analogy is *theory-neutral*.

The preceding examples illustrate the sense in which the notion of analogical *model* is systematically ambiguous. In its abstract sense, it may mean the structure exemplified by particular systems (e.g. the ditransitive construction *S-V-O1-O2* exemplified by Jespersen's two sentences). In its concrete sense, it may mean a particular system qua exemplification of a given structure (e.g. the sentence *John gave Mary an apple* qua exemplification of the *S-V-O1-O2* construction). I shall consider these two formulations as equivalent. They are in fact conflated e.g. in Bloomfield's (1933: 275) notion of analogy: "A grammatical pattern (sentence-type, construction, or substitution) is often called an *analogy*. A regular analogy permits a speaker to utter speech-forms which he has not heard; we say that he utters them *on the analogy of* similar forms which he has heard." Logically enough, Bloomfield defines 'irregular analogy' as a model with (very) few exemplifications. In quite the same way de Saussure (1962 [1916]: 221) noted that the analogical model may be either one form or (the structure common to) several forms: "L'analogie suppose un modèle et son imitation régulière. Une forme analogique est une forme faite à l'image d'*une* or *plusieurs* autres d'après une règle déterminée" (emphasis added). — Notice that 'analogical model' is really a pleonasm because there can be no model which, qua model, would not be analogical.

2. A Taxonomy of the Relations between Two Analogous Systems

Systems may exist already or only begin to exist, just as they can be known already or only begin to be known. It follows that the relation between any two systems that can reasonably be considered analogous may be either symmetric or asymmetric with respect to their ontological and/or epistemic status. This produces a four-way taxonomy, as shown in Figure 4.

		ontological	
		symmetry	asymmetry
epistemic	symmetry	1	4
	asymmetry	2	3

Fig. 4

These are the logical possibilities. To what extent are they actualized in fact? Our 'bird vs. fish' example illustrates the type 1 (= 'ontologically and epistemically symmetric'): birds and fish exist in the same way and are known to us equally well. Thus, the relation between the two types of animal is both ontologically and epistemically symmetric; and this relation was literally *discovered* at a certain moment in the history of zoology.

(There is a certain relativity of viewpoints lurking here, however. In a different environment, e.g. in a desert, fish may be both nonexistent and unknown.)

The type 2 (= 'ontologically symmetric, epistemically asymmetric') represents the case where two analogous systems exist in the same way, but one of them is known later than — and typically with the aid of — the other. In this case, too, the analogical relation is *discovered*. The standard illustration of the type 2 is how the concept of **wave** has been applied in the history of science: the phenomenon of sound was really understood only when the analogy between water waves and sound waves was discovered; and the existence of light waves was discovered even later (cf. Laudan 1981: 127–135, Holland et al. 1986: 336–342). Furthermore, the light waves turned out to be a special case of electromagnetic waves; and the analogy between all kinds of waves — from water to light — rests on the twin notions of wave length and frequency. Now, there may be a tendency to assume that if B is discovered later than A, B must somehow be ontologically secondary vis-à-vis B. This assumption is unfounded, however. As physical phenomena, water, sound, and light, for instance, are ontologically equal. (To be sure, this presupposes that sound and light are not considered as 'secondary qualities', i.e. phenomena dependent on the human perceptual system.) Thus, their relation to one another is ontologically symmetric, even if it is epistemically asymmetric.

The type 3 (= 'ontologically and epistemically asymmetric') is exemplified by *inventions* or *creations* of any kind. First, B neither exists nor is known (to exist); next, someone invents the idea of B and then brings B into existence. It seems to be the case that B is always based on some A or other, i.e. on more primitive (analogical) models of some sort. This is shown with exceptional clarity by Gutenberg's own account of how he came to invent the printing press (cf. Koestler 1964: 121–124). He knew that figures and words could be printed by means of engraving them on wood, applying thick ink on engravings, and then rubbing moist paper against them. However, this method was not suitable for mass production. On the other hand, coins were produced on a massive scale, namely by punching. But Gutenberg could not first imagine a workable synthesis of these two techniques. This happened only after he had witnessed the functioning of a wine-press: “I took part in the wine harvest. I watched the wine flowing, and going back from the effect to the cause, I studied the power of this press which nothing can resist...” — This process of invention may be reconstructed by saying that the observation of a wine-press suggested to Gutenberg the analogy between engraving and punching, which then enabled him to invent the printing press as a *blend* of these two.

In accordance with this interpretation, blending is a combination of, first, *discovering* a structure common to two (or more) analogous systems and, second, *inventing* an additional analogous system. Certainly the most celebrated instance of blending in the history of Western thought has been the *dialectical movement* from thesis A via antithesis B to synthesis C. Notice that an antithesis B is not just any antithesis, but an antithesis of the thesis A, which means that A and B must share some common structure X; and the same is of course true of the synthesis C as well.

The type 3 may also be illustrated by various developments in the history of formal logic. At the beginning of the 50’s, modal logic qua investigation of the notions of necessity and possibility was well-established, but no genuine deontic logic existed as yet. The situation changed with the publication of von Wright (1951). It was von Wright’s basic insight to invent deontic operators on the analogy of (existent) modal operators (cf. Hilpinen & Follesdal 1971: 9). If the modal operators *L* and *M* are exemplified by *Lp* = ‘it is necessary that p’ and *Mp* = ‘it is possible that p’, while the deontic operators *O* and *P* are exemplified by *Op* = ‘there is an obligation to do p’ and *Pp* = ‘there is a permission to do p’, then it can be shown that the two pairs of operators behave in the same way. In particular, the basic equivalence of modal logic *Lp* ^{o}~M~*p* (‘it is necessary that p iff it is not possible that not-p') has the deontic counterpart *Op* ° *~P~p* ('there is an obligation to do p iff it is not permitted to do not-p'). On the other hand — as might be expected — the analogy between modal logic and deontic logic is not perfect. The tautology of modal logic *p* ® *Mp* (known as 'ab esse ad posse') has no deontic analogue, such as *p* ® *Pp*; and the iteration of operators (exemplified by *LLp*), which is permitted in most systems of modal logic, produces ill-formed deontic formulae (like **OOp*).

Furthermore, the type 3 is illustrated by the invention of many-valued logic (cf. Zinov'ev 1963: Chap. 1). Let us represent 'true' and 'false' by 1 and 0, respectively. In two-valued logic the formula *~p*, i.e. the negation of *p*, has the values 0 and 1 iff *p* has the values 1 and 0. The conjunction *p & q* has the value 0 if at least one of its conjuncts has the value 0; otherwise it has the value 1. The disjunction *p Ú q* has the value 1 if at least one of its disjuncts has the value 1; otherwise it has the value 0. The implication *p* ® *q* has the value 0 if *p* and *q* have the values 1 and 0, respectively; otherwise it has the value 1. Now, one arrives at many-valued logic in two steps: first, 0 and 1 are replaced by the *analogous* designations 'lower number' and 'higher number'; second, any numbers between 0 and 1, in addition to 0 and 1, are accepted as truth-values. If the truth-value of a formula A is expressed by /A/, then /~A/ = 1 - /A/. For instance, if /p/ = 0.8, then /~p/ = 1 - 0.8 = 0.2. The many-valued definition of conjunction is: /A & B/ = min(/A/, /B/). For instance, if /p/ = 0.8 and /q/ = 0.2, then /p & q/ = 0.2 (and, more generally, the truth-value of a conjunction is always the same as the lowest truth-value of its conjuncts). Correspondingly, /A Ú B/ = max(/A/, /B/). For instance, if /p/ = 0.8 and /q/ = 0.2, then /p Ú q/ = 0.8 (and, more generally, the truth-value of a disjunction is always the same as the highest truth-value of its disjuncts). The many-valued definition of implication may be less transparent: /A ® B/ = 1 if /A/ £ /B/; and /A ® B/ = /B/ if A > B. For instance, if /p/ = 0.2 and /q/ = 0.8, then /p ® q/ = 1; and if /p/ = 0.8 and /q/ = 0.2, then /p ® q/ = 0.2. The two parts of this definition may be explained as follows. In two-valued logic, an implication *A* ® *B* has the value 1 in the three constellations /A/ = 1 & /B/ = 1, /A/ = 0 & /B/ = 1, and /A/ = 0 & /B/ = 0. This gives rise to the (analogical) multi-valued *generalization*: '*A* ® *B* has the value 1 whenever /A/ is the same as or lower than /B/'. On the other hand, in two-valued logic an implication *A* ® *B* has the value 0 in the constellation /A/ = 1 & /B/ = 0. Again, this gives rise to the (analogical) multi-valued generalization: 'whenever /A/ is higher than /B/, /A ® B/ is the same as /B/'.

The invention of deontic logic and the invention of multi-valued logic illustrate two distinct uses of analogy (of type 3). Deontic logic was invented literally *on the analogy of* modal logic: first there was the system A, and then a system B, analogous to A, was invented. The case of multi-valued logic is different: first there was two-valued logic, and then it was realized that it is really just a special instance of a more *general* notion, namely multi-valued logic. As noted above, this generalization was achieved by replacing the two discrete numbers 1 and 0 by analogous, but more general designations 'higher number' and 'lower number'. At the same time, the discrete opposition ('either - or') was replaced by a continuum ('more or less').

The type 4 (= 'ontologically asymmetric, epistemically symmetric') represents the case where A and B are known equally well although B begins to exist later than A. This type of analogy is illustrated by the general notion of **copy**: if we have a mechanical way of producing A, B, C, etc, it seems natural to say that we know all of them equally well even at the moment when A has been produced while B and C have not yet been produced. (And notice that some unforeseen event may prevent B and C from ever being produced.) It might also be said that while the types 1 and 2 are exemplified by *discovery*, and the type 3 is exemplified by *invention* (or *creation*), the type 4 is exemplified by *application*.

The type 4 might conceivably be illustrated also by more outlandish cases. For Descartes, the existence of God was just as clear and distinct an idea as his own existence (based on his own self-consciousness). The same sentiment was expressed some 200 years later by James Clerk Maxwell in a letter to his wife: "I can always have you with me in my mind — why should we not have our Lord always before us in our minds ... If we had seen Him in the flesh we should not have known Him any better, perhaps not so well" (quoted from Koestler 1964: 689). God does not exist whereas both Descartes and Maxwell's wife did; and yet Descartes claimed to know God and himself equally well while Maxwell claimed to know God and his wife equally well. Although this instance of the type 4 may seem somewhat extraordinary, it is not subjective, i.e. it illustrates the nature of *religious attitude*, which is certainly an intersubjective phenomenon. Moreover, that there indeed obtains a 'copying' relation between man and God, seems hard to deny.

It is clear that, in reference to the title of this paper, e.g. the analogy between bird and fish exemplifies 'analogy within reality'. Now, this creates the following problem. Gentner et al. (2001), for instance, treats analogy as purely a matter of *cognition*, and thus identifies the study of analogy as falling within the realm of cognitive science. Investigations conducted within the artificial-intelligence tradition represent the same approach to analogy (cf. Helman 1986). But this cannot be right. The person who discovered the analogy between bird and fish was practicing zoology, not cognitive science (let alone artificial intelligence). Similarly, those who discovered the wave-character of light were practicing physics, not cognitive science. Of course, they were *making use* of their cognitive capacities (as every human being is at any moment), but this is a different matter. It is impossible to deny that in these and similar cases the analogy is grounded in the 'things themselves', and not only in the human mind. (It is clear, by contrast, that invention and application, i.e. the types 3 and 4 of our taxonomy, do fall within the realm of cognitive science.)

What we have here is, of course, the perennial problem of the relation between the human mind and the mind-independent reality. As much as this problem has been debated during the last 2'500 years or so, both in the

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West and in the East, little genuine advance has been achieved vis-à-vis what Aristotle already said: "... but that the substrata which cause the sensation should not exist even apart from sensation is impossible" (*Metaphysica* 1010b, 30). It goes without saying that Aristotle is here speaking about the general case, not about aberrant instances of auto-stimulation (which do occur, of course). In the Middle Ages, the Aristotelian position was reaffirmed e.g. by Boethius the Dane: "Licet ergo res non possit intelligi praeter omnem modum intelligendi, distinguit tamen intellectus inter ipsam rem et ipsum modum intelligendi" [= "Although things cannot be understood apart from their conceptualization, the human reason nevertheless distinguishes between things and their conceptualization"] (1980 [c. 1280]; cf. Itkonen 1991: 230; also p. 189–191, 213).

We must certainly admit that the Earth (= 'thing') existed already before there was anyone to conceptualize it, and in spite of the fact that, for us, the Earth is necessarily a thing-as-conceptualized, i.e. a result of our conceptualization (and verbalization). Correspondingly, claiming analogy to be *purely* a matter of cognition amounts to full-fledged idealism, or to claiming that nothing at all exists apart from the human mind (which appears to be a rather untenable position).

3. Analogy in Linguistics

A) General Remarks

The use of analogy has a long tradition in linguistics, going back to antiquity. This claim will be substantiated in what follows. In the history of linguistics, generativism is a unique school of thought insofar as it has officially banned the use of analogy. In the heyday of generativism, this position was actively resisted only by few, especially Householder (1971), Anttila (1989 [1972]), and Derwing (1973). The generativist critique of analogy has been presented and refuted in Itkonen (1997) and Itkonen

&Haukioja (1997). Since the early 80's analogy has been intensely studied in cognitive science. As a consequence, analogy has again come to be considered respectable in linguistics as well. Almost without exception, those linguists who today espouse analogy leave the generativist critique unanswered. They thereby create the misleading impression that their notion of analogy is somehow different from the one that was — long ago, as it now seems — criticized by generativists

B) Phonology

It is a general truth that units in a well-structured system are defined, or constituted, by their mutual similariries and differences. Therefore it is only logical that Trubetzkoy, the founder of structuralist phonology, recognized analogy (under the name of 'proportional opposition') as the centripetal force which keeps (phonological) systems together (cf. Trubetzkoy 1958 [1939]: 60–66). Consider the consonant system given in Figure 5.

p	t	k
b	d	g
m	n	m
f	s	u

Fig. 5

In this type of system the phoneme */k/* is defined by four distinctive features, which are elicited by contrasting */k/* with its closest neighbours: it is a voiceless (as opposed to */g/*), non-nasal (as opposed to */m/*), velar (as opposed to */t/*) occlusive (as opposed to */u/*). Phonological oppositions of this type are called 'proportional'. This notion of 'proportionality' may be made more explicit by showing the precise place of /k/ in each of the four chains of proportional oppositions:

voiceless	p:b = t:d = **k**:g
non-nasal	p:m = t:n = **k**:m
velar	p:t:**k** = b:d:g = m:n:m = f:s:u
occlusive	p:f = t:s = **k**:u

Thus, the distinctive features of /*k*/ are identical with the *differences* between /*k*/ and its neighbours. ‘Difference’ between *X* and *Y* is just another term for the *relation* between *X* and *Y*. Now, as the fours chains of oppositions graphically show, the differences/relations between /*k*/ and its neighbours are in each particular case *the same* as the differences/relations between other pairs (or triplets) of phonems in the system. Hence, by definition, there is an *analogy* between these pairs (or triplets). — The analogical basis of phonological systems has been further elaborated on by Householder (1971: 65–67).

C) Morphology

The Roman grammarian Marcus Terentius Varro (116–27 B.C) understood analogy (= analogia) as a general organizing principle, illustrated e.g. by the proportion ‘daughter : mother = son : father’. According to Varro, the same principle recurs both in arithmetic and in language. He applied it, for instance, in his analysis of the Latin tense/aspect system. First, the three incompletive tenses, i.e. imperfect, present, and simple future, constitute the (‘conjoined’) analogy of Figure 6.

$$\frac{\text{legebam ('I was reading')}}{\text{lego ('I am reading')}} = \frac{\text{lego ('I am reading')}}{\text{legam ('I will be reading')}}$$

Fig. 6

In other words, the relation of past to present is the same as the relation of present to future. Furthermore, the incompletive tenses stand in an analogical relation to the completive tenses, namely pluperfect, perfect, and future perfect (with the respective meanings 'I had read', 'I have read', 'I will have read'), i.e. *legebam* : *lego* : *legam* = *legeram* : *legi* : *legero*. All these facts can be summarized in the two-level analogy of Figure 7. — Varro's tradition has been continued in particular by Paul (1975 [1880], esp. Chap. 5) and by Anttila (1989 [1972]) and (1977).

$$\frac{\text{Imperfect}}{\text{Present}} = \frac{\text{Present}}{\text{I Future}} \quad = \quad \frac{\text{Pluperfect}}{\text{Perfect}} = \frac{\text{Perfect}}{\text{II Future}}$$

Fig. 7

D) Syntax

The use of analogy in syntax has been illustrated with examples taken from generativist literature in Itkonen & Haukioja (1997). Here, I shall give an example taken from construction grammar. This is justifiable insofar as constructions (in the present technical sense) are claimed to represent the "syntactically relevant aspects of verb meaning" (Goldberg 1995: 28). — Consider the following sentences:

(1) John sneezed
(2) John slept
(3) John kicked the wall
(4) John hit the ball
(5) John pushed the napkin off the table
(6) John gave Mary a letter
(7) John sneezed the napkin off the table
(8) John kicked Mary the football

Goldberg (1995: Ch. 1–2) makes inter alia the following claims on behalf of construction grammar. The sentences (7) and (8) exemplify 'non-basic' meanings of *sneeze* and *kick*. Postulating the existence of such meanings as independent units would be ungainly. It is more reasonable to assume that the non-basic meanings have been assigned by the *constructions* into which the two verbs have 'integrated' their basic meanings. For *sneeze* and *kick* the constructions are the caused-motion or *S-V-O-Obl* construction and the ditransitive or *S-V-O-O2* construction, respectively. In both cases, it is the construction itself which contributes additional participant roles to the verb meaning. Thus, constructions have meanings of their own, which are necessarily more abstract than verb meanings (apart from the meanings of such maximally abstract verbs as *go*, *put*, *make*, *do*, *give*).

Now, analogy plays the following role in this framework. The sentences (1) and (3) exemplify the basic meanings of *sneeze* and *kick*, which means that the two verbs in turn exemplify the intransitive *SV* construction and the transitive *SVO* construction, respectively. It follows that (1) and (3) are *analogous* to (2) and (4), respectively. This is the self-evident or, if you wish, trivial sense of analogy, also exemplified by Sapir's and Jespersen's examples (cf. Sect. 1). Sentences (5) and (6), in turn, exemplify in a straightforward fashion the two constructions which (7) and

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(8) exemplify in a less straightforward fashion. Thus the *S-V-O-Obl* and *S-V-O-O2* constructions, exemplified by (5) and (6), have been *analogically extended* to (7) and (8), which means that (7) and (8) are non-trivially analogous to (5) and (6). Analogical extension operates as follows. The construction *S-V-O-Obl* has the corresponding set of meanings 'Agent-Action-Patient-Source/Goal'. The sentence (1) matches the initial part of this correspondence, i.e. *S-V* & 'Agent-Action'. This makes it possible to complete the correspondence, i.e. to add a patient-expression (e.g. *the napkin*) and a source-expression (e.g. *off the table*), which produces the sentence (7).

Fauconnier & Turner (1996) and Mandelblit (2000) analyze the sentence (7) differently. As they see it, in this sentence "a novel conceived caused-motion sequence of events is *blended* with a prototypical instance of the caused-motion construction" (Mandelblit 2000: 200). This terminology seems inappropriate, insofar as it suggests that syntax (= 'constructions') can fuse with semantics ('events') to form a third type of entity. For my part, I would prefer to use the term 'blend(ing)' in its traditional sense. Thus, cases where two related structures produce a third one were called 'contaminations' or 'blends' by Bloomfield (1933: 423); for instance, *I am friendly with him* and *We are friends* produce the blend *I am friends with him.* Hockett (1966: 94) in his turn claimed that "analogy, blending, and editing are the basic mechanisms of the generation of speech"; and in a footnote he added that this may be true of human behavior in general. His notion of analogy is the standard one. By 'blending', he means a process where two conflicting analogies produce a new structure. For instance, a form like *swammed* results from the following two analogies: *sigh* : *sighed* = *swim* : *X* and *sing* : *sang* = *swim* : *X.* It would seem that in its current use 'blending' is getting confused with 'conceptual integration'. Form and meaning may be integrated, not

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blended. Similarly, constructing phrases and sentences out of lexical units is an instance of integration, not of blending.

It is generally thought that the *Peri syntaxe_s* by Apollonius Dyscolus (c. 200 AD) is the oldest extant treatment of syntax in the Western tradition. This is not quite accurate, however, because Apollonius' actual object of study is the sentence, i.e. both the *form* and the *meaning* of the sentence. On the first page of his book, Apollonius states the general principle of sentence-construction: "For the meaning which subsists in each word is, in a sense, the minimal unit of the sentence, and just as the minimal units of sound compose syllables when properly linked, so, in turn, the structural combining (*syntaxis*) of meanings will produce sentences by combining words." Later, this principle has come to be known as the principle of *compositionality*.

The pervasive *non*-compositionality of language has been one of the basic insights of cognitive linguistics. According to this view, there are no longer any general rules that would mechanically combine words (or word meanings) to produce sentences (or sentence meanings). For instance, Sinha & Kuteva (1995) show in detail how the location of a thing, instead of being expressed by a single word, may — depending on the language — be expressed simultaneously by several words. Thus, meanings are expressed by entire syntactic 'chunks' or gestalts. The same is true of Goldberg-type constructions. In particular, this insight undermines the applicability of categorial grammar, as in Montague grammar or in Jackendoff-type syntax-cum-semantics. (This difficulty has been recognized in part by Jackendoff (1996: 7).) But if the notion of general, mechanically applicable rules has to be rejected, what is the remaining alternative? As Zlatev (1997: 7.4) has pointed out, referring to Itkonen & Haukioja (1997), it is *analogy*, i.e. either subsuming some cases under existing gestalts (or constructions) or extending these to other cases. How this happens, has been illustrated above by means of the Goldberg-type use of constructions.

E) Semantics

It is a very old idea that language is, or at least should be, a picture of the reality. The vicissitudes of this idea within the Western linguistic tradition, from antiquity via the Middles Ages to the end of the 20th century, have been described in Itkonen (1991: Ch. 5). The current concern with *iconicity* is just the latest stage in this development.

Because iconicity is defined as structural similarity between linguistic and non-linguistic entities, it is of course a straightforward exemplification of the general notion of *analogy*. In reference to the title of this paper, this is 'analogy between reality and language'. Moreover, there is a general assumption that it is the non-linguistic term of the iconicity relation which causes, and thus *explains*, the nature and constitution of the linguistic term, and not vice versa. There is reason to distinguish here between two basic types of non-linguistic entities, namely ontological-cum-conceptual and merely-conceptual. For brevity, the terms 'ontological' and 'conceptual' will be used in what follows (cf. Itkonen 1994).

'Ontology' means here the way that the language-external reality is conceptualized by ordinary human thinking. Alternative ontologies exist, but will be ignored here. At least the following ontological dimensions are relevant to the notion of iconicity: *quality*, *quantity*, *order*, and *cohesion*. Qualitative ontological distinctions include 'thing vs. action', 'agent vs. patient', 'human vs. non-human', 'animate vs. inanimate'. Quantitative ontological distinctions include 'one vs. many', 'less vs. more'. The basic ontological distinction of order is 'before vs. after'. The basic ontological distinction related to cohesion is 'perceptually (or causally) close vs.

distant'. Research conducted by representatives of the typological-functionalist school has shown that all these distinctions tend to be reflected in cross-linguistic data (for an informative, and early, survey, see Haiman 1985).

Ontological distinctions are genuinely explanatory. Consider the distinction of order. If one event precedes another, this is an *objective fact*, which cannot be construed as a matter of *language* only; so there is no danger of circularity. The same is true, mutatis mutandis, of the other distinctions as well. To be sure, one and the same phenomenon may be construed as either 'one' or 'many', depending on the context, but it is again an objective fact whether, if compared in the same context with something else, it exemplifies 'one' or 'many' (or 'less' or 'more'). In addition, recent research on infant psychology shows that these distinctions have their roots in preverbal thinking (cf. Sect. 4).

Negation is a prime example of a (merely-)conceptual, non-ontological phenomenon, because it is evident that, rather than being something that exists ('objectively') in the world, negation is an operation performed by humans. The same is true of the act of *identification*. While a sentence like *A is hitting B*, when true, pictures something in the world, a sentence like *A is (the same as) B* does not. Rather, it expresses an operation performed by humans. However, it is clear that such mental operations as negation and identification precede the emergence of language (cf. Sect. 4), and therefore they too are genuinely explanatory: they explain why the corresponding linguistic expressions exist. In general, however, 'conceptual iconicity' is less reliable than 'ontological iconicity'.

Iconicity may be characterized as 'vertical' (directional) analogy, or analogy that goes from non-linguistic to linguistic. There is within semantics also 'horizontal' (directional) analogy. This distinction may be illustrated as follows. According to Givón (1995: Ch. 4), it is meaningful to distinguish between two 'megamodalities', viz. 'fact' and 'non-fact', expressed by affirmative-indicative markings and negative and/or subjunctive markings, respectively. Identifying subjunctive with 'non-fact' is unproblematic. By contrast, identifying negative too with 'non-fact' might seem somewhat problematical. From the logical point of view, *p* and *not-p* are considered as symmetrical, and therefore if the former expresses 'fact', it may be difficult to accept that the latter expresses 'non-fact'. From the standpoint of the *psychology* of logic, however, *p* and *not-p* are *not* symmetrical. Rather than expressing a fact, a true negative sentence (in the indicative mood) is thought to express the "denial of a falsehood", which is something more complicated than, and hence different from, a simple fact (cf. Evans 1982: 28). Thus, we have reason to accept Givón's position.

In a given language the markings for the two megamodalities are either asymmetric or symmetric. Both cases can be explained by analogy and, what is more, *only* by analogy.

In the *asymmetric* case, we have to do with vertical analogy or iconicity: from the ontological/conceptual point of view, 'fact' is more differentiated than 'non-fact', and linguistic structure reflects this difference. The asymmetric way to express the two megamodalities is exemplified by Modern Tamil. The affirmative-indicative verb, which expresses 'fact', inflects in person/number/gender and in three (basic) tenses. By contrast, the negative-indicative verb has four distinct forms (= a, b, c, d), of which the first three are uninflected: (a) expresses any tense and any person/number/gender; (b), being based on nominalized present tense, expresses habituality and any person/number/gender; (c), being based on nominalized past tense, expresses the past and any person/number/gender; only (d), which expresses the future, inflects in person/number/gender (cf. Asher 1985: 175). Apart from the negation, the megamodality of 'non-fact' is expressed either by the conditional mood or by one of several modal auxiliaries. The corresponding verb-forms, whether affirmative or negative, never inflect in person/number/gender, and only rarely in tense (ibidem, p. 165–166, p. 181–182).

When the two megamodalities are expressed *symmetrically*, we have to do with horizontal (or language-internal) analogy: the structure of affirmative-indicative is extended to that of negative and/or subjunctive. This case is exemplified — approximatively — by Latin. Affirmative-indicative and negative-indicative are fully symmetric (the latter being expressed by negative particles, conjunctions, or pronouns). Both in the indicative and in the subjunctive, there is the same number of non-future tenses (= present, imperfect, perfect, pluperfect). However, in the subjunctive there are no counterparts to the two future tenses (which means that the symmetry between fact and non-fact is not complete). It is quite obvious that, semantically, the four tenses of the subjunctive have become more or less confused. The reason is, of course, that their ontological/conceptual motivation is less than that of the indicative tenses. That they are maintained nevertheless, must be due to the analogical influence exerted by the latter.

At this point, it may seem that analogy 'explains too much'. But what would be the alternative explanation? There is none. To be sure, there is the additional question *why* one language chooses the vertical analogy (= semantic motivation) rather than the horizontal analogy (= morpho-syntactic motivation). It is unlikely that this question (which must remain unanswered in the present context) could also be answered by resorting to analogy.

It may be added that iconicity between language and reality is a special case of *analog* or *non-digital* representation. This type of representation is characteristic of so-called *mental models* in particular: "a mental model does not have an arbitrarily chosen syntactic structure, but one that plays a direct representational role since it is analogous to the structure of the corresponding state of affairs in the world — as we perceive or conceive it" (Johnson-Laird 1983: 156). Dennett (1991: 147–149) has emphasized that the brain does not have to use the analog mode of representation. But this is just the point. It is only the more interesting to note that, as the existence of iconicity shows, language does make use of this mode of representation although there is no need to do so.

F) Linguistic typology

It is a general truth that linguistic *typology* and universals research are based on cross-linguistic analogy. The same is true eo ipso of the possibility to *translate* from one language to another. This can be shown quite concretely by exhibiting (in Figure 8) the similarity between structures that serve the *common function* of expressing the meaning 'I do not see it' in German, French, Finnish, Swahili, West Greenlandic, and Wari'. The corresponding sentences are as follows: *ich sehe es nicht, je ne le vois pas, en näe sitä, sikioni, takunngilara, om ka kerek tain*. It is essential to grasp the (meta-)analogy between Figure 8 and Figure 1. It is advisable to give first the subfunctions, or the meanings-to-be-expressed.

NEG	nicht	ne – pas				-i-	-nngil-		om ka
1SG:AG		ich	je					si- ta-	
3SG&N:PAT	es	le		sitä	-ki-			ara -in	
'see'	sehe	vois		näe	-on(a)	taku-		kerek	

Fig. 8

As can be seen from Figure 8, the French *ne – pas* and the Swahili *si – i* are discontinuous morphs expressing NEG, the Finnish *en* and the Swahili *si-* are portmanteau morphs expressing both NEG and 1SG:AG, and the West Greenlandic *-ara* is a portmanteau morph expressing both 1SG:AG and 3SG&N:PAT.

It goes without saying that this type of description still leaves many facts unaccounted-for. This becomes evident when we consider the affirmative counterparts of the above sentences: *ich sehe es*, *je le vois*, *näen sen*, *ninakiona*, *takuvara*, *kerek inain*. It turns out that there are often interdependencies between NEG and other parts of the sentence: in Finnish, between *en* and the verb form *näe* (vs. the affirmative *näen*); in Swahili, between *si-* and the verb form *-oni* (vs. the affirmative *nina-...-ona*); in Wari', between *om* and the subject clitic *ta-* (vs. the affirmative subject clitic *ina-*; the form *ina-* also expresses tense/mood, which in the negative construction is expressed by the separate clitic *ka*); in Finnish, between *en* and the partitive-case object *sitä* (vs. the accusative-case object *sen*, which occurs in the affirmative construction). Moreover, there is an interdependency between 1SG:AG and 'see' in *ich sehe* and *je vois* (as can be seen by comparing them e.g. with the combinations 1PL:AG & 'see' *wir sehen* and *nous voyons*). Finally, 'see' is for simplicity interpreted here as an action (as shown by the AG vs. PAT distinction), and the tense, the mood, and the voice of the verb as well as the word order are not dealt with explicitly. Nevertheless, the main point should have become clear: There is no way that we can study several languages simultaneously, unless we consider them as *analogous* to one another; and Figure 8 shows, in a preliminary fashion, how this is done. Notice also that the facts summed up by Figure 8 are *theory-neutral* in the sense that any typological description, regardless of its more specific formalization, has to accommodate them.

In addition to the basic analogy that obtains between all languages of the world, it is possible to set up several kinds of *clines of* increasing or decreasing *analogousness*. One such cline results from comparing sign languages with oral languages. Both in American and in Finnish Sign Language the meaning 'give' is expressed in such a way that the verb encodes the agent and the recipient obligatorily, and the patient optionally. The Japanese or the Chinese verb encodes no semantic roles; the Latin or the Finnish verb encodes one role (= agent); the Swahili or the Wari' verb encodes two roles (= agent and recipient); the Yimas verb encodes three roles (= agent, recipient, patient). On this cline, the American and the Finnish Sign Languages are situated between Swahili/Wari' and Yimas, which means that, among the above-mentioned languages, they are *most analogous* to these three (oral) languages (for more details, see Itkonen 2002a).

G) Concluding Remarks

The use of analogy in diachronic linguistics is illustrated e.g. in Anttila (1989 [1972]: Ch. 5) and in Itkonen (2002b). As for language acquisition, even generativists have come to accept the traditional view that it is governed by analogy (even if they insist on the supposedly innately language-specific nature of the analogy involved): "For language acquisition, what is the innate similarity space that allows the children to generalize from sentences in their parents' speech to the 'similar' sentences that define the rest of English? ... It must be some kind of mental computation that makes *John likes fish* similar to *Mary eats apples*, but not similar to *John might fish*" (Pinker 1994: 417).

In the present framework metaphor is an analogy between systems belonging to distinct conceptual domains. To the extent that the notion of 'conceptual domain' is vague, the distinction between analogy and 'mere' analogy is correspondingly vague. Heine (1997) and DeLancey (2001), for instance, have argued for the analogical/metaphorical basis of the entire grammar. Echoing views of American pre-generativist structuralism and of stratificational linguistics, Anderson (1992) outlines a theory in which all levels of grammar, from phonology to syntax, are analogous to each other.

How does the four-way taxonomy of Section 3 apply to language? The cross-linguistic analogy that underlies typological research (cf. Fig. 7) exemplifies the type 1, with the qualification that, at the moment when they become known, newly discovered languages have the same, although less drastic, relation to better-known languages as sound waves have to water waves in the type 2. (And, of course, before the cross-linguistic analogy was discovered by linguists, it had been invented or created by speakers around the world.) Sentence production may be thought to exemplify either the type 4 or the type 3, depending on whether it is just a matter of routine or whether it contains a creative element. The latter alternative entails the possibility of linguistic change.

4. Analogy between Mind and Language: Explaining Linguistic Universals by means of Prelinguistic Cognition

The attempts to explain putative linguistic universals are often threatened by circularity. The following figure of thought is very common. Once a structure or process A has been observed to recur in the world's languages, it seems plausible to postulate a corresponding cognitive structure or process B. And, now that the existence of B has been made plausible, it seems natural to causally explain A on the basis of B. In spite of its intuitive naturalness, this figure of thought is defective, i.e. it is the circular inference also known as *virtus dormitiva*. It should be carefully noted, however, what it is, precisely, that is defective about this figure of thought. Distinctions that occur, in one form or another, in all languages (like those between present and past, or between singular and plural) are certainly *psychologically real*. But it is just tautological to *explain* some data on the basis of a hypothetical entity for which this same data constitutes the sole evidence.

There is more than one way to avoid the circular inference. For instance, it is possible to make *new* predictions on the basis of A, i.e. predictions not contained in A. Only if these predictions prove to be true, may A be thought — preliminarily — to be genuinely explained. According to Laudan (1981: 114–133), a large part of the 18th-century natural science, in particular physiology, was committed to postulating unobservable entities on the basis of the *virtus dormitiva* principle; the importance of new predictions began to be fully understood only since the beginning of the 19th century. That part of modern (psycho)linguistics which directly projects linguistic constructs into psychology repeats the mistakes of the 18th-century natural science.

In the present context, 'making new predictions' includes expanding the original data-base A. For instance, the near-ubiquity of the 'noun vs. verb' distinction in the spoken languages of the world makes it plausible to assume that the conceptualization of the extralinguistic reality contains a corresponding 'thing vs. action' distinction. This conceptual distinction may then be used to (iconically) explain why the 'noun vs. verb' distinction also occurs in the sign languages as well as in the so-called home sign systems, where it is known as the distinction between 'pointing gestures' and 'characterizing gestures' (cf. Goldin-Meadow & Mylander 1990).

There is, however, also a more straightforward way to avoid the circular inference, namely seeking a domain where it is simply not possible. In the present context, this means *pre*linguistic behavior and cognition. The term 'prelinguistic' may be taken either in the phylogenetic or in the ontogenetic sense. Here it is meant to be taken in the ontogenetic sense. I shall consider the first 12 months in children's cognitive development. By common consent, this is a period when the child does *not yet* possess language.

The structure of my argument is as follows. I shall concentrate on the prelinguistic cognition of the child, or the cognition which *cannot* be influenced by language. (Hence, no threat of circularity.) Prelinguistic behavior exhibits certain structures and processes A which make it plausible to assume that prelinguistic cognition contains certain structures and processes B. (Notice that B has been reached non-circularly, i.e. on the basis of new predictions.) All of the world's languages (presumably) exhibit structures and processes A' that are recognizably *analogous* to A. Now there are two options: (i) B is the cause of both A and A'. (ii) The analogy between A and A' is due to chance, which means that A is caused by B and A' is caused by some B', i.e. by some sort of purely linguistic cognition. It is important to realize that here there is no option of B' replacing B, i.e. no option such that 'language determines thinking'(because, to repeat, B represents *pre*linguistic thinking). I shall argue that the (modular) option (ii), although logically possible, is just too wasteful to be plausible. This means that we must accept the option (ii), which (as noted above) is based on the *analogy* between A and A'.

During the last two decades our knowledge about early cognition has undergone a radical change. The traditional child psychology (including Piagetian developmental psychology) had no way to experiment on, e.g., 4-month old children and concluded that they practically lacked cognition. The new and 'revolutionary' insight consisted in the realization that there **is**, after all, one form of behavior that even very young children are able to control, namely the direction and the duration of their *gaze*. The so-called habituation method is based on the assumption that children look longer at what they find incomprehensible or surprising. Leslie (1988: 196, 200) has noted that the habituation method presupposes that the child has mastered the concept of *contradiction*: he refuses to accept the fact that, e.g., a solid object, which cannot penetrate another solid object, does so (or seems to do so, due to experimental tricks).

The most important results concerning the *physical* world-view of 4-month old children are summarized by Spelke et al. (1992). Already at this stage, children possess a concept of *thing* which is basically the same as the corresponding adult concept. It is characterized by the following attributes: cohesion, permanence, solidity, and continuity of motion. 'Thing' also turns out to be a non-modular notion in the sense that the child is surprised if vision and touch produce contradictory information. Moreover, Leslie (1988) has shown that 6-month old children are able to visually distinguish mechanical *causation* (= motion caused by impact) from mere spatio-temporal contiguity (= delayed motion or motion not caused by impact). These results show that the physical world-view of adults is 'in place' already at the age of 6 months. The subsequent development produces enrichment but no qualitative change.

Mandler (1996) delineates the *biological* world-view of prelinguistic cognition. At the age of 6–7 months children grasp the difference between mechanical motion and biological or spontaneous motion, which lends further support to Leslie's (1988) results. This gives rise to the conceptual distinctions 'animate vs. inanimate' and 'agent vs. patient'. Tomasello (1995), in turn, delineates the *psychological* world-view of prelinguistic cognition. He claims (p. 175) that at the age of 9 months there begins a 'social-cognitive revolution' which causes the child to acquire the concept of intentional agent, or to understand that there are other people with feelings and intentions.

Cohen (1988) has applied the habituation method to the study of concept-formation and has shown, for instance, that 7-month old children conceptualize toys in the same way as adults do. Similar results have been reached in a great number of studies. Of course, the existence of prelinguistic (or nonlinguistic) concept-formation has been known for a long time, from the study not just of children but also of higher animals.

What is new is the fact that the habituation method has been able both to extend the coverage of concepts and to show that they emerge earlier than had been thought before.

These results conclusively refute the view that 'there is no thinking without language' or that 'language creates thought'. (It is a different matter that, quite obviously, there is no *abstract* thinking without language.) Moreover, a natural explanation is provided for the fact that in the world's languages there are systematic means to express, in addition to central everyday concepts, such concepts as thing plus its opposite (= action), causality, animate vs. inanimate, agent vs. patient, intentional vs. non-intentional, and so on. The explanation is that language merely expresses what existed before, namely prelinguistic cognition.

Piagetian developmental psychology starts from the premise that thinking (qua internal action) is produced by sensori-motor behavior (qua external action). Now, as we just saw, it is wrong to assume that sensori-motor, e.g. manual, behavior constitutes some sort of absolute starting point for the emergence of thinking. On the other hand, it seems just as undeniable now as it seemed before that, once thinking has emerged, there is some sort of general correlation between the development of sensori-motor behavior and the development of thought.

Langer (1980, 1986) is a large-scale longitudinal study of cognitive development based sensori-motor evidence. The subjects are 6-to-24-month old children who are investigated at eight separate stages. The purpose of the study is to discover how children manipulate either discrete objects like plastic stars, rings, cups, and spoons or non-discrete objects like balls and rings made of wax. Their manual behavior is accompanied by gaze and babble.

Since I am interested to know what cognition is like just before the emergence of language, I shall concentrate on one age group, namely

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children at the age of 12 months. I shall enumerate a number of manual operations that children regularly perform when they have reached this age. All these operations have obvious analogues in linguistic behavior.

At the age of 12 months, instead of manipulating just one object, children have started to manipulate two or more objects (Langer 1980: 326). The most common forms of manipulation are joining and separating. Objects constitute a set (more often horizontal than vertical) to whose members the following operations may be applied: addition and deletion (p. 314–325, 357–364), substitution and permutation (p. 337–344). Coordination is manifested in repeated bipartite operations like picking and squeezing a piece of wax (p. 386–387). Negation and identification are manifested e.g. when a child takes a ring of wax, squeezes it, and then restores it into its original shape (p. 386–387). Mastery of one-to-one correspondence or analogy is manifested when, e.g., two spoons are first put into their respective cups and then taken out (p. 303–309, 339, 348).

It is easy to detect the following linguistic analogues. The transition from one to two (or more) objects has its counterpart in the transition from one-word to two-word utterances. Joining or combining is of course the basic syntactic operation, but it may be added that, ever since Aristotle, affirmation and negation have been semantically conceptualized as, respectively, the combination and the separation of the contents of the subject and the predicate (cf. Itkonen 1991: 177). Addition and deletion are operations presupposed, inter alia, by the notions of optionality and ellipsis. Substitution is presupposed by the notion of syntactic frame. Permutation is the basis for corresponding word order changes (or 'transformations'). Coordination, negation, and identification are expressed by the corresponding types of sentences. There should be no reason, by now, to dwell on the linguistic manifestations of analogy.

It is good to add that, at the age of 15 months, the child has learned to create ‘routines’ in which interchangeable objects play specific roles. For instance, first one toy is set upright and then it is knocked down with another. According to Langer (1986: 30–35), this type of behavior anticipates such semantic roles like ‘agent’ and ‘patient’. As was noted before, Mandler (1996) assumes that such notions are acquired already before the age of 15 months.

It is undeniable that the manual behavior described above would not be possible without corresponding cognitive processes; it is also clear that manual behavior has analogues in (subsequent) linguistic behavior. Now, it cannot of course be *proved* that prelinguistic cognition causes the two types of behavior, or that they emanate from a more abstract cause that subsumes prelinguistic and linguistic cognition. However, it would be artificial and uneconomical to assume, in conformity with the modularity hypothesis, that a great number of (nearly) identical processes are operating independently in different cognitive domains.

The significance of Langer’s results resides in the fact that they may be used to explain the basic structure of all languages, whether spoken or signed. A sentence is a combination of words that represent various semantic roles. Sentences exemplify structures in which words may be replaced by other words. Some words are optional, and others may be moved into a new position. In addition to expressing states of affairs that involve (participants exemplifying) various semantic roles, sentences may express identification; they may be negated; they may be combined, as in coordination.

Here the basis of explanation is constituted by cognitive processes which have no direct ontological counterparts. This is why the Langer-type explanations should be called ‘cognitive’ or ‘conceptual’ explanations, in contradistinction to ‘ontological’ or iconicity-based explanations (cf. Subsection 3 D).

So far, we have started with the gaze, and then we have moved to the hands. Once we move to the whole body, or its interaction with the environment, we might conceivably arrive at 'image-schemata' of the type that Lakoff (1987) and Johnson (1987) have been advocating.

I have been discussing prelinguistic explanation of language, and I shall conclude by mentioning Bates' (1976) work on the prelinguistic precedents of speech acts. The analogy between non-verbal 'proto-declaratives' and 'proto-imperatives', on the one hand, and spoken (or signed) declarative and imperative sentences, on the other, is so self-evident that it would be ludicrous to deny it. And it would be just (or almost) as ludicrous to deny that what cognitively causes the one causes the other too.

In reference to the title of this paper, the relation between prelinguistic cognition and linguistic behavior exemplifies of course 'analogy between mind and language'. Other instances of this type of analogy are the relations between spatial perception and language, or between music and language (cf. Itkonen 1998). These cases exemplify a 'horizontal' type of cognitive analogy. Fauconnier and Turner (2000: 285) go even farther and are willing to postulate a wide-ranging 'vertical' analogy that pervades both the animal and the human mind: "Pavlov's dog ... and the fleeing antelope ... have their analogues in the highest intellectual realms."

5. Analogy in Cosmology and in the History of Philosophy/Science

Analogy is the cornerstone of the *Weltanschauung* of each and every culture. In this context, analogy may bemanifested either as a string of binary (or ternary etc.) oppositions or as an isomorphism between microcosmos (= 'man') and macrocosmos (= 'universe') or as a combination of the two. Strings of binary oppositions may be seen as (analogical) generalizations from such fundamental oppositions as 'man vs.

woman' or 'day vs. night'. In different cultures or in different periods of one and the same culture, strings of four-fold oppositions may be based on the four elements or on the four cardinal points. It is even possible to base a cosmology on the (five) phases of the prototypical love-relationship (cf. Itkonen 2000). One perennial question in sociological theory has been the following: Where do institutions get their legitimation from? How do they manage to command loyalty? Douglas (1986) offers a bold answer to this question, summarized in the title of Chapter 4 of her book: 'Institutions are founded on analogy'. The type of analogy she is referring to is the one we are dealing with here, namely the analogy that underlies the *Weltanschauung* of a given community.

The history of philosophy and science is replete with analogies, some of them better than others. Here is a brief list of the more epoch-making analogies; it often occurs that one and same thinker entertains several, sometimes even conflicting analogies: Plato, Aristotle, William Ockham: language ® mind; Pythagoras, Kepler: musical harmony ® universe; Aristotle: man ® nature; Kepler, Descartes, Newton: clockwork ® universe; Spinoza, Hobbes: (axiomatic) geometry ® social psychology; Hobbes: Galilean mechanics ® social psychology; Hume: Newtonian mechanics ® social psychology; Kant: astronomy, experimental physics ® metaphysics; Hegel: life-history » world-history » logical development; Hegel: thought ® material existence; Marx: material existence ® thought; Darwin: geology, demography, artificial selection / domestication ® natural selection; Darwin: human psychology ® animal psychology; Turing: mind ® machine; Artificial Intelligence: machine ® mind; Shannon: electricity ® logic; Koestler, Popper, Toulmin: natural selection ® intellectual progress; various thinkers: instrument, institution, living beng, species, organ, set of objects ® language. — Some of these analogies have been discussed in Itkonen (1983: Ch. 6).

It is my contention that intellectual progress is not possible without the help of analogies / metaphors. Often — more often than is generally recognized — the progress is illusory, which means that the analogies employed have been *bad* ones. But the risk of inventing bad analogies is the price that one has to pay for being able to make any progress at all.

6. Conclusion

One of the criticisms that generativism levelled against analogy was that analogy is 'too powerful' or 'explains too much'. (The same type of criticism is being levelled today against 'blending'.) This type of criticism has to be answered in two steps. First, assuming that there is a 'norm' of analogy, an adequate theory of analogy must allow the norm to be broken, in two directions: on the one hand, because bad analogies do occur, there must be room for them; on the other, because creative analogies by definition transcend the norm, the theory must be open enough to have room for them too. Second, if one narrows one's focus and deliberately concentrates upon the norm, it is possible to formalize it, contrary to what generativists have always been claiming (cf. Hofstadter 1995, Itkonen & Haukioja 1997, Lepage 2001).

Conversational compressions:

Conceptual blending and virtual interaction in phrases

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Abstract

This presentation deals with the use of situated face-to-face conversation as a structuring frame of verbal and non-verbal conceptualizations, blended into a simplex conceptual integration network (Fauconnier & Turner 2002). This is a common and stable type of blend, which I call *virtual interaction* (Pascual forthcoming). The focus of the work presented here is on compressed imagined conversations used as phrasal constitutents. Conventionalized examples of these in English are: "a yes man", "a *publish or perish* policy"; "*make-or-break-it* years"; "*forget-me-nots*", and "*do's* and *don'ts*". Non-conventional, attested examples are: "*I-Care* rules", "a *how-to-prove-it* case", "a *don't you dare quote me* paper", "this *I'm so cool!* attitude". The theoretical framework adopted here is Gilles Fauconnier and Mark Turner's conceptual blending (cf. 1996, 2002), which is partly a development of Fauconnier's theory of mental spaces ([1985] 1994). Empirically, this paper is based on naturalistic data from a number of different domains, from advertisement and literature to law and litigation.

1. Virtual realities

Cognitive linguistics has shown that language expressions are not determined by some truth or need to fit the world. Rather, they are prompts for setting up conceptual structures whose relation with the physical world may be rather complex. Under the cognitive approach, virtual entities and relationships, with no direct counterparts in actuality, are taken as actual conceptual realities which may help us understand the nuances of language, thought and action. It is suggested that "departures from the direct description of ACTUALITY are ubiquitous and fundamental in language" (Langacker 1999: 78). This argument derives from the conviction that natural language requires mental imagery and that "fictivity" is a crucial component of human cognition (Talmy 1996). Virtual entities, events and processes are often introduced by language users as a means to gain mental access to actual ones. Examples of these are: a) virtual identities (Fauconnier 1994; 1997); b) virtual motion, under the alternative labels fictive, abstract and subjective motion (Matlock 2001; Talmy 1996, 2000; Langacker 1987, 1991; Matsumoto 1996a); c) virtual or subjective change (Matsumoto 1996b); and virtual speech acts (Langacker 1999). I will introduce here a new type of virtual reality set up by language, what I call *virtual interaction* (Pascual forthcoming).

2. Virtual interaction

A well-known example of virtual interaction (VI) from the conceptual blending literature is Debate with Kant, in which a contemporary professor argues with the eighteenth century philosopher (Fauconnier & Turner 1996, 2002). In actuality, no modern-day academic can bring a long perished thinker to the modern era and engage in simultaneous debate. However, this is made possible through setting up a simplex conceptual integration network in which the frame of ordinary conversation, further specified by the debate frame, is projected upon the blending of two different input spaces (Pascual forthcoming: ch 4).

Now, since language is often the most graspable indication of thought and activity, pieces of conversation are sometimes used as part-whole compressions of whole events. At the discourse level, there is thus an integration of one conversational performance into another. Regardless whether this is produced in direct or indirect speech mode, it need not be a report of an actual communicative event stored in the mind of the speaker. In fact, more often than not these peculiar cases make use of hypothetical utterances that were actually never produced. This will be the kind of virtual interaction that I will examine in this paper. Consider for instance the attested examples below, extracted from a printed advertisement and an on-line press article:

(1) a. Asthma was too often having to tell my kids *"I can't"*

b. The couple said *"I do"* in front of 75 friends and family.

In the advertising message in (1)a, a physical condition related to one's breathing – but certainly not to the content of one's speech – is defined as the utterer's verbal interaction with her offspring. The advertisement shows a woman in a field playing with two energetic, young children. The inference intended is clearly that as a result of her asthmatic condition, the utterer of (1)a could not do much exercise until she started using the advertised product. Thus, the mother's unfortunate verbal pattern of behavior, too often having to tell her children "I can't", is not relevant by itself. It is introduced as an indication of how her medical condition used to affect her everyday life.

A similar case occurs in (1)b. What made the news simply cannot be that two people – even if they were celebrities – uttered the words "I do". To be sure, a waiter must hear these words pretty often when asking customers whether they want sugar or milk in their coffee. However, within the wedding scenario these words, uttered by the couple in a highly symbolic, ritualized interaction with a properly authorized figure, are culturally associated with the acceptance of marriage vows. Although it is actually not until the two spouses-to be sign up the marriage forms that they become legally married, uttering “I do” within the appropriate communicative setting is more culturally salient. Right after this assertion comes the *performative act* of marrying the couple through the words “I thereby declare you…” (Austin 1962, see also Sweetser 2001), which turns signing up the forms a mere necessary technicality.

Although these utterances may refer to actuality, or at least pretend to do so, I believe they both constitute cases of *virtual interaction* (VI). First, they may never have been produced in the telegraphic form in which they are presented. Second, even if they were produced word by word as in (1), they are not set up as ultimate referents. They are supposed, idealized, or canonical verbal performances used as part-whole compressions to introduce or mentally access some property or event in an actual or virtual communicative situation.

I see virtual interaction as most probably resulting from the use of the schematic structure of everyday face-to-face conversation as an organizing pattern which can serve to understand, reason and talk about communicative and non-communicative entities, processes, and relationships in conversational terms. In order to understand why a communicative structure should be used successfully to frame the conceptualization of a non-communicative one, we first need to have a look at the role of communication in our everyday lives. One of the main theoretical assumptions here is that the basic internal and external organizational structures of communication partly derive from our experience since infancy as social beings constantly exposed to and engaged in verbal interactions. We have always been talked to and thus we later reproduce this well-engrained pattern. We talk to new-born babies, pets, plants, and at times even computers and automobiles as much as we talk to our speaking adult fellows. We are perfectly aware that the new-born baby, the pet, the plant, the computer and the automobile cannot possibly respond to us and engage in reciprocal conversation. Yet, we still talk to them as though they could, without giving it a second thought. Similarly, we often talk to ourselves when there is nobody in the room but ourselves to listen. Whether we are entering our pin code in the ATM, trying to remember a past event, or struggling with a problem-solving task, we talk aloud, say things sub-vocally or speak inwardly more often than we may want to acknowledge. Again, we are not deluded to think that we have a double self with whom we confide and check our thoughts. But we verbalize our thoughts nonetheless. Vygotsky (1962) claims that the internalization of external dialogue can serve as a powerful tool in the stream of thought. Indeed, there is enough evidence to believe that the verbalization of mental processes may help us do computations and organize our thoughts in a similar fashion as moving our fingers helps us count (Hutchins 1995: 313ff, ch. 8).

3. Virtual interaction uses

Virtual interaction is far from being an extraordinary phenomenon that only appears in restricted socio-cultural settings, for very specific communicative purposes, and in a small set of communicative structures and grammatical constructions. Quite differently, it seems to be very pervasive in language and communication. It occurs in the playground as well as in the courtroom, in colloquial, oral as well as formal written language, and in all levels of communication. In particular, the structuring conversational frame of virtual interaction can be observed at (Pascual forthcoming): i) the communicative event (e.g. trial, conference panel); ii) the communicative performance (e.g. closing argument, paper presentation); iii) the CURRENT DISCOURSE space (Langacker 2001), in which metaphorical blends are set up; iv) the sentence;

v) the clause, and vi) the phrase. First, I believe that each interactional sequence in the overall socio-cultural event of a trial for instance is perceived as a single turn in a broader imagined conversation. Second, all monologues are in actuality dialogues or trialogues, which have the persuasive power of turning addressees into co-constructors of discourse. Third, face-to-face conversation seems to be used as an input space for metaphorical blends, as in Debate With Kant, discussed above. Forth, virtual interaction can be observed at the sentence level, like rhetorical questions (Pascual in press), and what I have called *rhetorical assertions* ("I bet you my house…") and *rhetorical commands* (e.g. "Call me biased but…"). Fifth, interactional clauses, also occur, as in the integration of a definition and the application of this definition in a decision-making process (e.g. "Express malice means *was there an intent to kill?*", Pascual in press). Finally, one can also find cases of virtual interaction at the level of the phrase. This is the level at which virtual interaction will be examined here. The different kinds of phrasal imagined conversations are briefly outlined, and a particular case of a question used as a noun modifier in a lawyer's discourse to the jury is analyzed.

4. Phrasal virtual interaction

Similarly to sentential virtual interaction and unlike the clausal use, one can find both conventional and creative cases of phrasal VI in standard English (Pascual forthcoming). Conventional uses are: "*forget-me-not*s", "*do's* and *don'ts*", "*fixer-up*per", "*yes* man", "a *publish or perish* policy"; "*make-or-break-it* years"; "a *must see* (movie)". Non-conventional, attested examples are: "a *just-try-to-get-along* trip", "*I-Care* rules", "a *don't you dare quote me* paper", and "this *I'm so cool!* attitude". Before we examine the different uses of the phrasal VI, let us have a look at here how this kind of compressions might come to existence. Below is a pair of attested examples, the prime counterpart of which illustrates the phrase usage of the virtual interaction case discussed in (1)b:

(2) a. The couple said *"I do"* in front of 75 friends and family.

a'. *"I do!"* Dishes

As we saw in the previous section, in a wedding setting the production of the utterance type "I do" by the bride and groom constitutes a standard and symbolic part of the ritual, which can be used as a part-whole compression of the overall wedding and the social commitment of getting married. The use in (2)a is thus culturally meaningful and in fact it appears with such frequency that one may even want to characterize it as semi-conventionalized. Example (2)a', in which the ritualized words function as a noun-modifier, is more creative. This was written on a stylish box of porcelain dishes in the window of a Manhattan store for the just-married or the married-to be. The utterance "I do!" serves to prompt the overall wedding and marriage scenario, as in (2)a. Notice, however, that in (2)a', these same words are not ascribed to a particular couple and they are not even used to talk about getting married. Rather, they serve to characterize an object as particularly suitable for weddings or for gifts to the just-married. Therefore, the expression "I do!" frames the noun that it modifies, i.e. dishes, within the wedding and marriage scenario.

4.1. Phrasal VI uses: Grammatical form and illocutionary force

Virtual interaction at the level of the phrase is less marginal than what it may at first seem. I have gathered over a hundred naturalistic creative and conventionalized examples of virtual interaction phrases primarily from English, but also from Spanish, Catalan and Dutch, over a period of approximately two years. These can be categorized according to the grammatical form in which they can occur or the illocutionary force they can show. Phrase-level virtual interactions can be observed in all four established illocutionary structures: i) declarative, ii) interrogative, iii) imperative, and iv) exclamative. This subsection discusses a conventional and a non-conventional attested example of each. These come from oral and written occurrences, and conventional phrases. The examples occurred in different domains of social activity, ranging from informal conversations among friends, to novels, and academic lectures and papers.

Declarative. Let us start with a creative and a conventional case of phrasal VI displaying the declarative structure:

(3) a. The problem is that we all rely on' the '*I'm the only one anyway'* syndrome.

b. "*Déu n'hi do*"
[God gives quite a bit]
[quite a bit, not bad]

Example (3) is extracted from Jane Goodall's autobiographical book *Reason for Hope* (1999, page +). There, the utterance in italics is ascribed to a plural "we", referring in this context to the whole humanity. It seems obvious that the one producing such an utterance must be a generic virtual addresser, and thus that the utterance presented is a virtual one. Its appearance in a pre-noun position as a modifier thus indicates that the italicized utterance is used as a phrasal VI. Interestingly, in this example the VI survived translation. Both the original English and its translated Dutch version display a virtual interaction at the level of the phrase (i.e. "Het probleem is dat we allemaal lijden aan '*het ik-ben-het-maar*' syndroom", 2000, p. 223).

The phrase in (3)b is a conventional, fossilized declarative functioning as an adverb, which can either appear followed by a noun phrase or in isolation, referring to a prior or subsequent utterance. The fact that it is used as an adverbial phrase is highlighted by the possibility of it appearing in the diminutive, i.e. *Déu n'hi doret*. Notice that the diminutive suffix -[r]et is not attached to the substantive *Déu* [God], but rather to the verb *do* [give]. Since adverbs but not verbs can accept a diminutive marker in Catalan, we need to assume that the utterance is construed as an adverbial conceptual whole.

Interrogative. Take now the interrogatives below:

(4) a. I wasn't saying it, because then we would get into [these
do we understand each other? conversations].

b. "a *whodunit* case", "a *whodunit*"

In (4)a, the utterer is not referring to conversations in which the interactants actually repeat or even produce the question: "do we understand each other?". Rather, he is talking about a kind of conversation in which the interactants attempt to find out whether they understand each other or not. More precisely, in the types of interactions referred to the participants discuss each other's view of their relationship, and the obvious differences in the interactants' BELIEF spaces actually constitute main conversational topics. The italicized utterance is thus a virtual one, used as a noun-modifier.

The phrase “*whodunit*” in (4)b is conventional in English to refer to a legal case or trial in which the issue to be decided is the identity of the perpetrator, that is “who has done it”. This is a fossilization of the common use of a question to present the mystery to be resolved, the legal hypothesis to be proven or the issue to be decided upon (Pascual in press, forthcoming: ch 4). Since the overall investigation, trial, and decision-making processes are governed by this virtual utterance, the legal case investigated, tried and judged, can be referred metonymically via this question. A process of grammaticalization has thus been involved in which a sentential virtual interaction becomes conventionalized as an adjective and a substantive. The attested, creative VI phrasal compression in “This is not a *whodunit*, it’s a *how-it-prove-it* case” may suggest how such a diachronic process might have occurred.

Imperative. Consider now the embedded imperatives below:

(5) a. [*Rent-A-Car*.Inc.]
b. “a [*don’t-ask-don’t tell*” policy]”

Example (5)a is the name of a rental car company in the United States. The name simultaneously serves to refer to the business and to persuade virtual addresses to make use of what the company offers via the virtual command “rent a car”. A proper name depiction therefore appears conceptually integrated with an advertisement communicative style and function. The example in (5)b illustrates a conventionalized imperative as a virtual interaction phrase, which generally appears as a noun-modifier, frequently but not invariably followed by “policy”. Again, as in the examples above, the voice or *locutor* (Bakhtin 1981) of the conventionalized command is a virtual one, which makes the example a case of a phrase-level VI.

Exclamative. Although less frequently used as VI phrases than declaratives or imperatives, exclamatives also appear in that pragmatic category:

(6) a. so we just had [this *oh, God this is the worst party we've*
been for years feeling].

b. *quemacos*
[howpretties]
[Barcelona citizens]

The utterance in (6)a was produced during a conversation among friends on the utterer's worse new year eve's party. The exclamative, introduced by the standand English 'Oh' discourse marker, is presented as an interactive means to define how bad the event really was. It thus does not serve as a direct quote or paraphrase of an actual language production, but rather, as a lively means to define the emotional state in which the virtual utterers were when leaving the party, and by inference, say something about the party as such.

The compressed virtual expression "Que maco!" [How pretty!] in (6)b is apparently used conventionally in the Catalan dialect of Tarragona to refer to Barcelona visitors. I am told that the standardization of this usage is motivated by two interaction-related factors. First, the adjective "maco", instead of "bonic", is a dialectal feature of Barcelona Catalan. Second, according to Tarragona locals, Barcelona city-dwellers become so stunt with the natural beauty of the Tarragona province, that they constantly exclaim "Que maco!" [How pretty!] when visiting it. Barcelona visitors are identified by saying "Que maco!" all the time, which gains them the nickname "quemacos" in Tarragona.

4.2. Grammatical functions and domains of activity

Let us now take a look at the phrasal occurrence of virtual interaction more generally. In particular, at the grammatical functions which it can take, and the different domains of social activity in which it is most frequently produced. Let us consider first the main grammatical functions that phrasal VIs can show, making reference to the examples discussed above. These grammatical functions are, in order of frequency: i) pre-nominal modifier, especially followed by a non-content noun such as "kind" or "type" (e.g. "a *you could have done more* kind of feeling"); ii) substantive; and iii) proper name; iv) verbs (e.g. don't you dare *poor thing* me"); and v) adverb.

Although phrase-level virtual interaction occurs in too many and too varied domains for it to be considered a sociolectal feature, it should be noticed that – just as we saw in the case of sentential and especially clausal VI – they do occur in a higher percentage in oral than in written language, and in informal than in formal interaction. The main domains in which I have most frequently found supposed interaction in phrases are (in order of prominence): i) informal face-to-face conversation; ii) internet language; iii) advertisements; iv) written press; and v) formal oral and written conversations (Pascual forthcoming).

Given the long written tradition of Western law, a low frequency of virtual interaction instances should be expected in that domain. That seems certainly to be the case, especially in bench trial and in young jury professional cultures, as the Spanish one (Pascual 1999). However, some still occur in on-line litigation, and others are even conventionalized. Two examples of conventionalized phrasal VI in the legal domain are the phrase "*whodunit*", used as a substantive or as a modifier of the noun 'case', as in example (4b) above, and a U.S. crime bill popularly known as "*three strikes* *and you're out*". Also, in a similar way that the ritualized words "I do" uttered in the proper socio-cultural context serve to refer to getting married, the words "guilty" and "non-guilty" are conventionalized phrases that set up an innocent or guilty plea or verdict in the legal ritual (Pascual forthcoming: ch 5).

4.2.1. Virtual question, obvious answer: The *Who's buried in Grant's tomb?* Argument

This section examines a particular example of a phrase-level virtual interaction from litigation. The example is extracted from the district attorney's closing argument before the jury in a high-profile murder trial occurred at a California criminal court in the fall of 2000. After the prosecutor had instructed the jury on the legal definition of the special circumstances of "express malice" and "torture", he proceeds to establish the facts, one by one. As a means to introduce his argument on motive, the attorney walks to his table, looks at the jury and says:

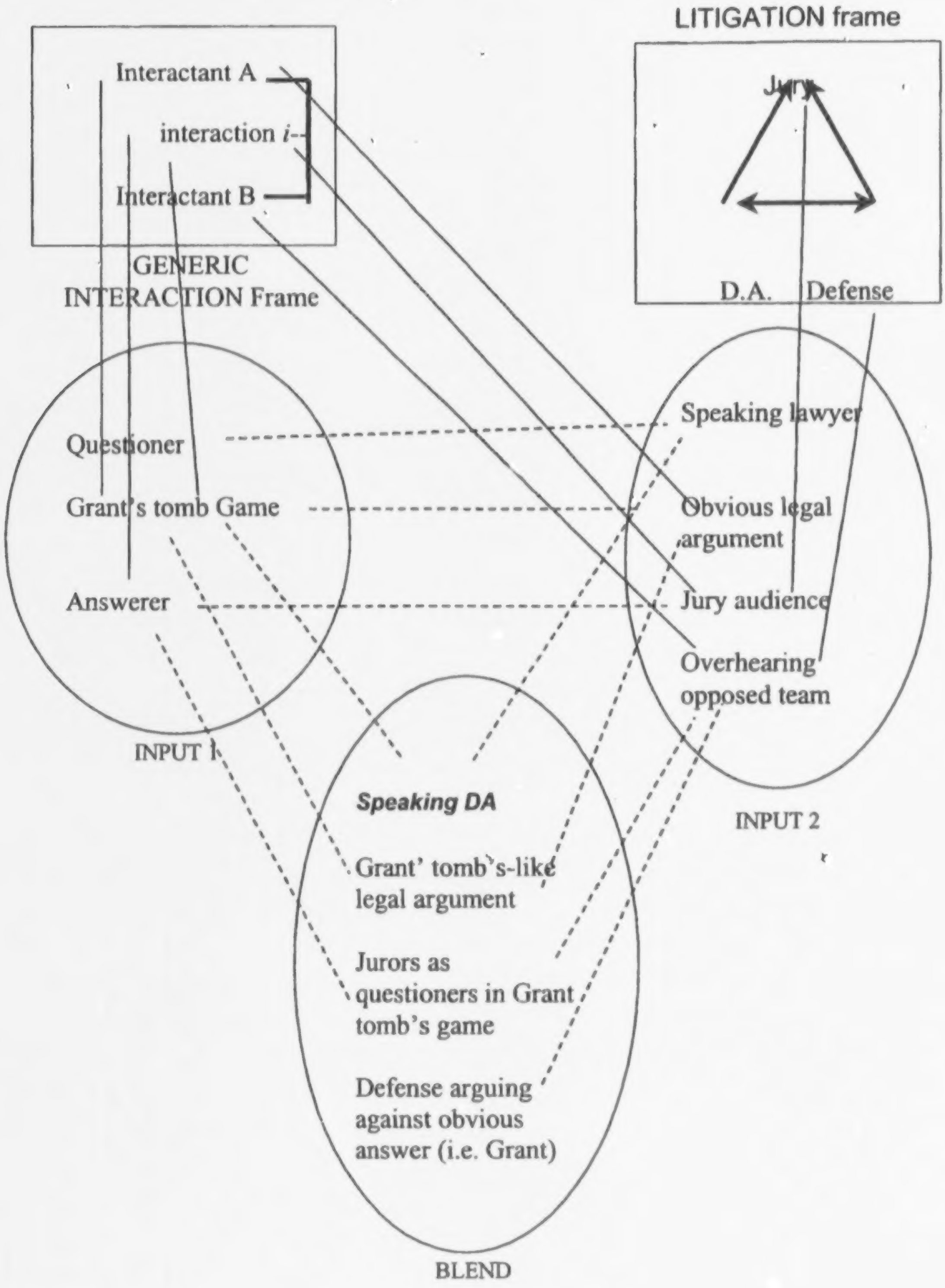
> (7) Now, was there an attempt to kill? This is kind of a *"who's buried in Grant's tomb" argument*, but [sly smile] you have to think about this.

What is interesting to us at this point is not the expository virtual question use in "was there an attempt to kill?". Rather, it is the embedded *"who's buried in Grant's tomb"* question (produced with imperceptible question intonation, if one is to follow the official transcript). From a purely syntactic point of view, the italicized portion of this fragment is an interrogative with a noun-modifier function. In this sense, the example above resembles those discussed in the previous section. The embedded question does not represent a quote or paraphrase of an actual question that has appeared or will appear later in the attorney's argumentation. This is the only time it is presented and it only serves the function of defining what kind of an argument the utterer is to present. This then takes it closer to the examples "these *do we understand each other?* conversations" in (4)a.

Notice now that the official court reporter chose to have the italicized interaction between quotation marks, even though, as we have just seen, this does not constitute an anticipation or reenactment of an actual question production. In order to understand this use one needs to project cultural information. The question "Who's buried in Grant's tomb?" comes from American children games, game show parodies, and jokes. What makes the question humorous is that the answer appears already in the form of the question, i.e. "Grant is the person who is buried in Grant's tomb". The answer to this question is so obvious that sometimes even the clever will miss it, as it arises from different motivations as regular questions. It violates our cultural models of what a question is. The question itself sets up a mental space which includes the conceptual element that constitutes the very value which the question role aims at (Pascual 1997), in this case the individual such as that individual is buried in Grant's tomb. Thus, by asking the question one is simultaneously explicitly providing the addressee with the corresponding answer. The inserted interaction here is a direct quote from the traditional joke question. The "argument" which this question is modifying is thus presented as being so obvious that the very introduction of the issue to be decided upon "was there an attempt to kill?", within the background information from the trial and the previous arguments in this discourse, should immediately prompt an affirmative answer. This notwithstanding, the district attorney still needs to develop the argument. The very fact that defense team is casting doubt upon this response may confuse the jury, in a similar way that one may be when asked a question whose answer is presupposed by the question itself. On the other hand, it is the legal obligation of the district attorney to show the "ultimate proof of guilt" and thus to convince the jury of every aspect of the case, no matter how obvious, that is questioned by the opposite side.

Bearing in mind what has just been explained, since the question is a standard one in modern American culture, and since the attorney is not setting it up for the jury to answer it, its questioner and answer illocutor roles are presented as fulfilled by abstract entities, namely a virtual questioner and answerer. Simultaneously, however, the virtual question serves to define the kind of an argument developed in the CURRENT DISCOURSE space. This argument is presented by the factual utterer of the discourse in REAL space, i.e. the prosecutor, in order to convince his direct addressees, i.e. the jury, of certain facts that proposed and argued for in opposition to the argument posed by the defendant and the defense team. Therefore, the virtual interaction presented through the standard "Who's buried in Grant's tomb?" question, is grounded in the REALITY space of the trial, and fulfilled by its relevant communicative roles. The prosecutor is basically saying that even though he may be regarded as posing embarrassingly easy questions to the jury, he still needs to do so, and will. Not only that, but he also needs to argue the obvious answer to them, so that there is not shred of doubt about the relevant facts. The interactional structure set up by the virtual embedded question is hence a triangular one, which reproduces the typical conceptual configuration of confrontational discourse: i) the orator who needs to convince (i.e. the speaking lawyer); ii) the addressee to be convinced (i.e. the jury); and iii) the adversary to be refutted (i.e. the opposite legal side).

This configuration is represented in the integration network below:


LITIGATION frame
Interactant A
interaction i
Interactant B
GENERIC INTERACTION Frame
Jury
D.A.
Defense
Questioner
Grant's tomb Game
Answerer
INPUT 1
Speaking lawyer
Obvious legal argument
Jury audience
Overhearing opposed team
INPUT 2
Speaking DA
Grant' tomb's-like legal argument
Jurors as questioners in Grant tomb's game
Defense arguing against obvious answer (i.e. Grant)
BLEND

Conclusions

In this paper I have dealt with a phenomenon of conceptual compression, what I call *virtual interaction* (Pascual forthcoming). This is a pervasive instance of a simple x network in which an ordinary mental space or blend gets integrated with the frame of ordinary face-to-face conversation. In particular, I have discussed creative and conventional cases of virtual interaction at the level of the phrase. These are imagined conversations used as part-whole compressions of supposed scenarios in which such conversations occur.

Referencies

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Conceptual integration in the domain of music.

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Abstract

Musical concepts can typically be described as conceptual integrations of properties from different domains e.g. a high pitch combining properties from physical space and sound. A precise account of conceptual blending in music depends on a description of musical properties. I follow R.I. Godøy's (1993) proposal of a spatial description of the properties of musical objects (in an phenomenological understanding) and apply P. Gärdenfors'(2000) theory of Conceptual Space as a foundation for describing the conceptual domain of music. On, this basis, musical concepts can be accurately described as conceptual integration. This is examplified through the melodic and rhythmic aspect. This approach to cognitive musical theory has interesting perspectives in regard to teaching and learning of music. Furthermore, conceptual integration theory contributes with new insight on central issues of learning as such.

„Musik... du Sprache, wo Sprachen enden"

With this quote from Rilke, Roger Scruton opens his article „Understanding Music" (Scruton 1983), a discussion of what we mean when we ascribe a content to music. Scruton points to the central role of the metaphor:

> ..in our most basic apprehension of music, there lies a complex system of metaphor, which is the true description of no material fact. And the metaphor cannot be eliminated from the description of music, because it is integral to the intentional object of musical experience. Take this metaphor away and you take away the experience of music. (Scruton 1983).

In "The unanswered question - Six talks at Harvard" Leonard Bernstein (1976) points to analogies between language and music and the role of the metaphor:

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> Music has intrinsic meaning of its own, which are not to be confused with specific feelings or moods, and certainly not with pictoral impressions or stories. These intrinsic musical meanings are generated by a constant stream of metaphors, all of which are forms of poetic transformations.

Cognitive linguistics

Lakoff and Johnson (1980) introduce in the book 'Metaphors we live by' a new understanding of metaphors as something which do not merely describe an exception. It is central that meaning is derived from a complexity of underlying schemata. In the same sense Ronald Langacker's (1986) Cognitive Grammar (alias *space grammar*), assumes that language is neither self-contained nor describable without essential reference to cognitive processing. Understanding the structure of a sentence and its meaning requires focusing on the cognitive processes involved in understanding or producing it. In cognitive grammar, linguistic units are identified as parts of domains which are themselves based on basic domains (space, time, sensible qualities such as colour etc.) endowed with some sort of geometric structure (Langacker 1987). Jean Petitot – one of main contributers of the morphodynamic school – thus makes the point that, according to cognitive grammar, concepts at the most basic level are positions / locations or configurations in some geometric manifold (Petitot 1995).

Conceptual Space (CS)

The work of Peter Gärdenfors (2000) of the morphodynamic school of thought (Thom 1991, Petitot 1995) as well as of cognitive linguistic (Lakoff and Johnson 1980, Langacker 1987) provides an extensive theoretical basis for conceptual spaces as a fundamental and universally applicable mode of reasoning. The theory presents a framework for representing information on a conceptual level, bridging between the symbolic and connectionist approach. A Conceptual Space is build up from geometrical and topological structures based on a number of quality dimensions. The dimensions are taken to be infra-linguistic in the sense that we can think about the qualities of objects, without presuming an internal language in which these thoughts can be expressed. A metaphor expresses a similarity in topological or metrical structure between different quality dimensions. In this way one can account for how a metaphor can transfer knowledge about one conceptual dimension to another – especially carrying information from a more fundamental quality dimension, for which the topological structure is well established conceptually, to a less fundamental dimension for which the structure is not yet completely determined.

In accordance with R. I. Godøy's (1993) proposal of a *spatial approach* for cognitive music theory, combining a phenomenological and morphodynamic approach, I have been working on a model for the Conceptual Space for Music since 1998 based on the theory of Peter Gärdenfors, and this model has been applied in an investigation of melodic expectation of children (Holst 2001). The approach appears to be rewarding, however a problem arises when cross-domain properties are involved - when musical properties from e.g. the melodic aspect and the rhythmic aspect "join" into a new type of less fundamental quality dimension. Musical concepts are typically such 'multiple matrixes': a high note combines a dimension of physical space (high – low) with sound, a dark tone combines a visual property with sound.

Melodic properties

A theory of melodic expectation (Narmour 1990) is empirically tested across style, musical training and culture. I have tested it with children (Holst 2001) confirming the theory, but showing an asymmetry not accounted for in the original theory. This asymmetry points to a possible grounding in spatial properties. An interesting (but not necessarily reliable) point is that some of the children used spatial metaphors for melodic movement. This "hunch" is however supported by neuropsychological investigations by Zatorre and Halpern (1999) who based on PET scannings show that melodic imagination are bound to spatial imagery (SMA). This supports the notion of melody being grounded in the auditory- and the spatial domain. This does however not necessarily mean that melody is bound to words like high and low, which – to use Gärdenfors' terminology – would be on a symbolic and not on a conceptual level.

Rhythmic grounding

The rhythmic aspect of music is based on regularity, on something periodic. The regular beat of the music can be considered to be grounded in basic type experiences of regularity e.g. the heartbeat or the regular modification in sound. Regular modifications of sound is a more likely explanation, as they contain structures comparative to the metric systems used in music. However at the same time the rhythmic aspect of music is based on irregularity, on something aperiodic and more organic than mathematic. Body-movement is a probable explanation for the grounding of such properties. Further timing of body-movement is related to an expressive aspect. Transfer from body-experience to rhythm is based on isomorph structure in the two spaces, which makes it possible to transfer the property of e.g. a limping movement to rhythm – as it can be found in Schuberts "Die Schöne Müllerin".

The doubleness of rhythm poses a serious problem for the choice of a model for rhythmic perception. Desain and Honing (2002:54) discusses this central problem in regard to rhythmic research:

> First, without rhythmic categorisation there would be no reference against which to judge the expressive duration of a note: one would not be able to appreciate the difference between a deadpan and an expressive performance. And secondly, too much and too strict categorisation would cause a loss of timing information and the difference between a deadpan and an expressive performance would not even be noticeable.

They raise two topics: doubleness and balance. It is difficult to find a 'single scope' model which could account for this problem, and this approach would outrule balance.

Conceptual Integration (CI) and rhythm

Gilles Fauconnier and Mark Turner published in 1994 *Conceptual Projection and Middle Spaces*. (Fauconnier, Turner, 1994), and have just recently published the book "The Way We Think, Conceptual Blending and the Mind's Hidden Complexities"(Fauconnier and Turner 2002). They describe the (double scope) blend as follows:

> …the Blends create new structures by allowing counterparts to be mapped to distinct elements, with distinct attributes, and by allowing importation of specific structures in the inputs. The key constraint is that we don't just have a union of the inputspaces: only selected structure in the inputs is exported to the blend, but

> the overall projection will contain more structure than is available from the inputs ... The 'whole' that we find in the blend is thus both greater and smaller than the sum of the 'parts' ... we get a truly novel structure, not compositionally derivable from the inputs. Therein lies the creative force of such blends. New actions..., new concepts..., new emotions and understandings emerge. (Fauconnier and Turner 1994:16)

The counterparts in question in the following rhythmic blend are:

A: Regularity which is periodic with identical stress for each event, with no accents.

B: Irregularity which has an accent pattern, the different events have different stress or "weight", but they appear in an aperiodic way.

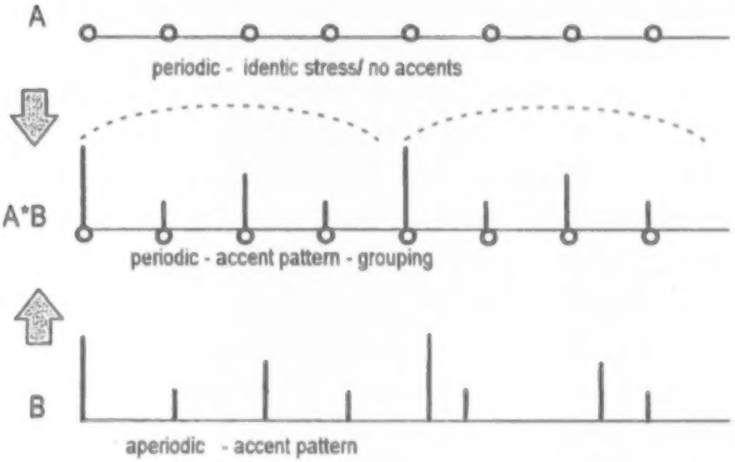
A
periodic - identic stress/ no accents
A*B
periodic - accent pattern - grouping
B
aperiodic - accent pattern

Figure 1. Combination of partial properties

A selected structure from space A and space B are mapped on the Blend A*B. Properties are mapped and the combination of *periodic* and *accent-pattern* together constitute the new property *grouping*. The necessary conditions for grouping are neither present in A nor B, but in A*B. There are common structures in A and A*B as well as in B and A*B, which again are the necessary conditions for transfer. The common structure between A and B - Generic Space - is time.

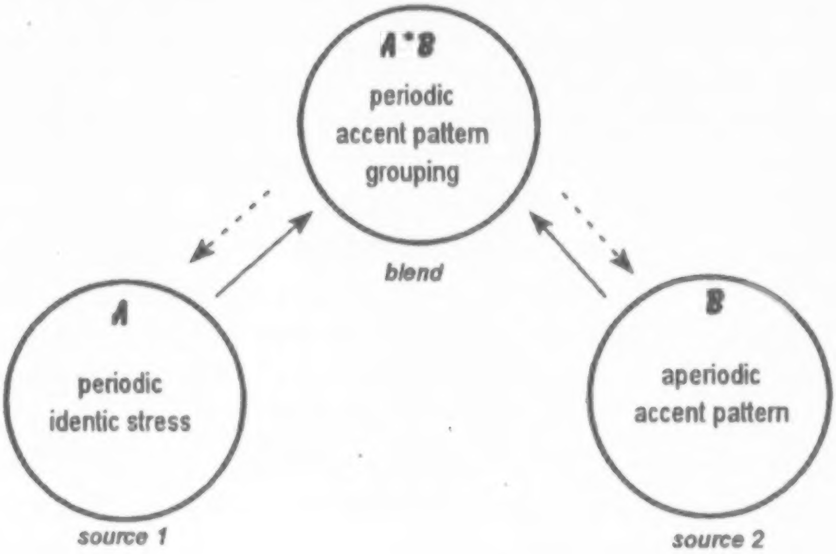
A*B
periodic
accent pattern
grouping
blend
A
periodic
identic stress
source 1
B
aperiodic
accent pattern
source 2

Figure 2. The rhythmic blend

Through experience and transfer (which is now possible due to the common structures) the new space with its specific properties, can now be extended and stabilized in accordance with the CS-theory.

Properties and balance

When a timespan in music is split up – and an extra note is placed between to beats – the original timespan is not always split into two equal parts. The ration between the to parts is called the swingratio. Categorizing swingratios according to a periodic property - space A - means that the ratios are limited to proportions like 1:2, 1:3, 1:4, 1:5 etc. i.e. rational numbers. In this way a new periodic partitioning is made. If the swingratio however is not a rational number, the partitioning is not periodic and would thus be a property of space B. Swingratio depend on style of music and Friberg and Sundström (1997) have shown that it also depends on tempo. A waveform analysis of Errol Garner: I Got the World on a String (a recording from 1954) shows that the swingratios can be a very dynamic affair within the same style and tempo. The periodic quality (deriving from space A) established a meter (a timegrid) against which deviations can be perceived which e.g. could result in a 'drive'. Such displacements are typical in jazz music, and Garner is well known for delivering such 'drive'. Another type of displacements found is changes from one swingratio to another within a short phrase. There are two way these changes could occur: sudden or gradually. A sudden shift from one swingratio to another would point to properties from space A, whereas a gradient change would point to properties from space B.

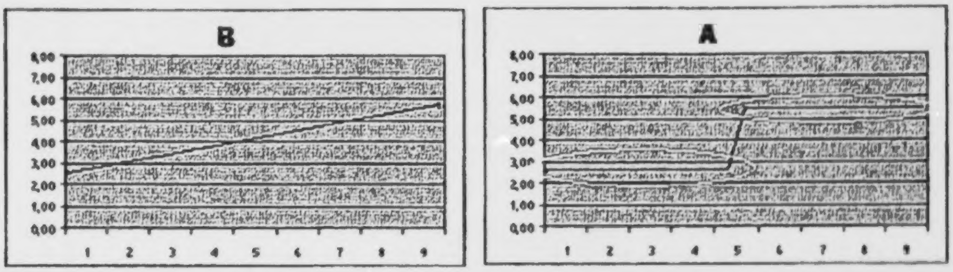

Figure 3. Sudden or gradual change

The analysis shows gradient changes, sudden shifts and mixtures. Complex gradual shifts appear in passages with a high expressive character. An example of this is measure 10 where the tempochanges are very differentiated – following the tonal curve thus intensifying the tonal expression.

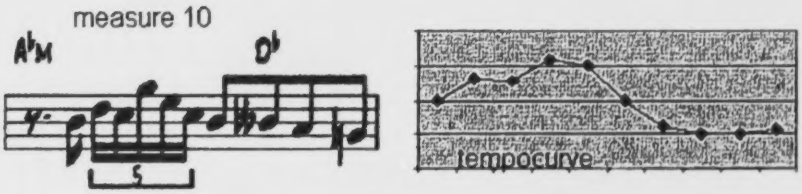

Figure 4. Gradient changes

The dynamic tempochanges and rhythmic regularity are clashing properties. The conflict-free blend is *periodic* combined with *accent-pattern* adding up to *grouping*. Deviations from the conflict-free blend can account for musical tension. A tempo-curve like the one above indicates properties from space B – properties grounded in body-movement, however the conflict from shifting the weight to space B is dissolved in the end of the phrase returning to a periodic swingratio. The changes, which also could be described as

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transformations, can be understood as double scope blends which are balanced differently –a remix, a change of weight – between potential clashing properties.

Conceptual networks and learning

The conceptual integration of rhythm blends spaces of more fundamental quality dimensions, for which the topological structure is well established conceptually, to a more abstract / less fundamental dimension for which the structure is not yet completely determined – the transfer described by Gärdenfors. The transfer is based on a partial isomorphy – and this requires that the more abstract / less fundamental dimensions are established, which is done through the blend.

This process of establishing new structure is a major question in the Science of Learning a.o. called *genuine learning* and part of the well-known dichotomy assimilation / accommodation. The blending-theory desribes this process as a *creative process*, which gives a new perspective to the role of the creative process in learning, changing the role from mainly having to do with selfconfidence and identity to having a central role in the core process of learning. Blending can thus be seen as a central process in learning, establishing new structure and enabling transfer as described by Gärdenfors. Together the two processes gives a new understanding of the dichotomy assimilation/acommodation.

In this light, it appears very rewarding to investigate the conceptual network of music with a special view to evolving new knowledge about teaching / learning music.

As the conceptual network would involve cross-domain connections it might furthermore be possible to map cross-domain transfers concerning music. In the music field there has been a lot of speculations about non-musical results of musical learning often called the "Mozart-effect". A six-year study in Berlin on this subject was finished last year. There are important findings in this area, but also a certain scepticism maybe due to a lack of focussed research on transfer. The blending theory opens new perspectives in regard to such a cross-domain mapping and further reseach in the field of music may very well be able to lead to new knowledge generally.

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The syntactic realization of conceptual integration: The quotative use of German modal verbs

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Abstract

Quotative constructions, with which a speaker can express that he is not the original source of the utterance, form a subtype of evidentiality, a much-discussed phenomenon in cross-linguistic research. In the study of Germanic languages, evidentiality is often categorized as a subtype of epistemic modality, since the same grammatical categories are used to express both, viz. modal verbs. However, historical and cross-linguistic evidence has shown that evidentiality is not inherently a modal category. The complex event of a speaker indicating that the utterance is to be attributed to a different participant in the discourse space is integrated into an event schema, provided by the prototypical modal verb construction, on the basis of an analogy mapping.

German allows for two semantically differentiated quotative constructions with the modal verbs *wollen* and *sollen*. Both constructions reveal a slightly different mapping schema, compressing inner- and outer space relations in order to achieve human-scale blending. The integrated syntactic blend creates emergent structure through partial projection, metonymic tightening and compression of semantic roles. A uniform basic mapping schema is revealed which underlies quotative modal verb constructions in a number of Germanic languages, including Danish, Swedish, Norwegian, Dutch and German.

1. Introduction

Recent research in cognitive science has revealed the centrality of the phenomenon generally called conceptual integration or blending in human thinking. Reflections of this cognitive capacity can be found in the most disparate products of the human mind. Fauconnier & Turner[ii] (2002) argue that the capacity for double-scope blending is actually at the heart of human development *in se*, as the conditio sine qua non for the development of language, religion, art, … that is: culture.

> Many phenomena for which we had partial descriptions – categorization, mathematical invention, metaphor, analogy, grammar, counterfactual thinking, event integration, various kinds of learning and artistic creation, global insight integrating vital relations like cause and effect – are products of the same well-defined imaginative operation (F & T 2002: 90).

Some enlightening investigation has been done into the association of blending patterns with specific language forms (Mandelblit 2000, Sweetser 1999, F & T 1996). Section 2 of this paper briefly sums up some of the research on blending and grammar. Partly based on the insights of this line of research as well as the Construction Grammar paradigm (Goldberg 1995, Croft (1999, 2001)), this paper will focus on the quotative use of certain modal verbs quite common in a large number of Germanic languages (section 3). In chapter 4, an analysis is offered of the compression patterns underlying quotative modal verb constructions

2. Blending and grammar: A state of affairs

Research on compression patterns in simple noun phrases has revealed that simple forms can actually prompt for the construction of highly complex blending patterns[iii]. Complicated integration networks have been shown to underlie simple Noun-Noun compounds like "land yacht", Adjective-Noun phrases as "likely candidate" or "safe beach" and Noun-Adjective combinations like "child-safe". Such grammatical blends are inherently underspecified, thus leading to *lexical* or *constructional ambiguity* (Mandelblit & Fauconnier 1997: 171).

This underspecification of the blending configuration can also be noticed on the level of more complex syntactic constructions. Some work has been done on *Y-of* networks of the type "Ann is the boss of the daughter of Max" (F & T 2002: 139-159), on resultative constructions (ibid.: 178*f*, Broccias 2001) and especially on caused-motion constructions (F & T 1996, Mandelblit 2000, Mandelblit & Fauconnier 1997). Since the caused-motion constructions reveal some of the central notions used in the present paper, we will briefly summarize the analysis provided in blending literature.

(1) a. *Jack threw the napkin off the table*
b. *Jack sneezed the napkin off the table*

The examples in (1) above illustrate that English does not reserve caused-motion constructions of the type [NP V NP PP] for verbs which already in their semantic structure refer to a caused-motion scene, as is the case for *throw* in (1a). The syntactic construction in which these verbs appear can also be used with verbs which do not have (caused) motion as part of their conventional (lexicalized) meaning structure, as e.g. *sneeze* in (1b). Goldberg (1995: 152-180) convincingly argues that English has a caused-motion construction with a semantic interpretation of its own which cannot be attributed to the semantics of the verb, preposition or the combination of verb and preposition. By attributing the semantics of caused motion to the construction as such, one can explain why verbs which do not inherently express caused motion do appear in caused-motion constructions, as e.g. in (1b) or in *Mary urged Bill into the house*, *Sam helped him into the car* and *Joe kicked the dog into the bathroom* (Goldberg 1995: 152*f*).

Underlying this apparently simple construction is a complex mapping pattern which integrates the sequence of events (e.g. sneezing, napkin on the table, napkin moving, napkin off the table) into a tightly compressed scene. Thus, one input space of the configuration is built up by a diffuse conceived event, a second input is the prototypical structure of a fully integrated caused-motion construction (as in *throw*). Elements from the input spaces are mapped onto each other and onto the blended space, as illustrated in figure 1 for (1b). In the resulting network, "the conceptual compression and the syntactic form come from the compressed input, while some individual words come from the diffuse input through selective projection" (F & T 2002: 371). In the case of the napkin being sneezed off the table, the syntax is projected onto the blend from the input of the integrated construction, while some of the words filling up the syntactic slots are projected from the diffuse input (figure 1). Notice, however, that depending on which elements are projected from the diffuse input, slightly different mapping patterns may emerge. The analyses of English caused-motion constructions have shown that variations appear according to which elements of the conceived event are projected (F & T 1996, Mandelblit & Fauconnier 1997). Whereas in the *sneeze*-example, the verb conceptualizing the causing event is mapped (*sneeze*), other constructions focus on the effected event, the actual caused motion (e.g. *He rolled the carpet into the living room*) or the verb expressing the causal relation (e.g. *He let the tank into the compound*).

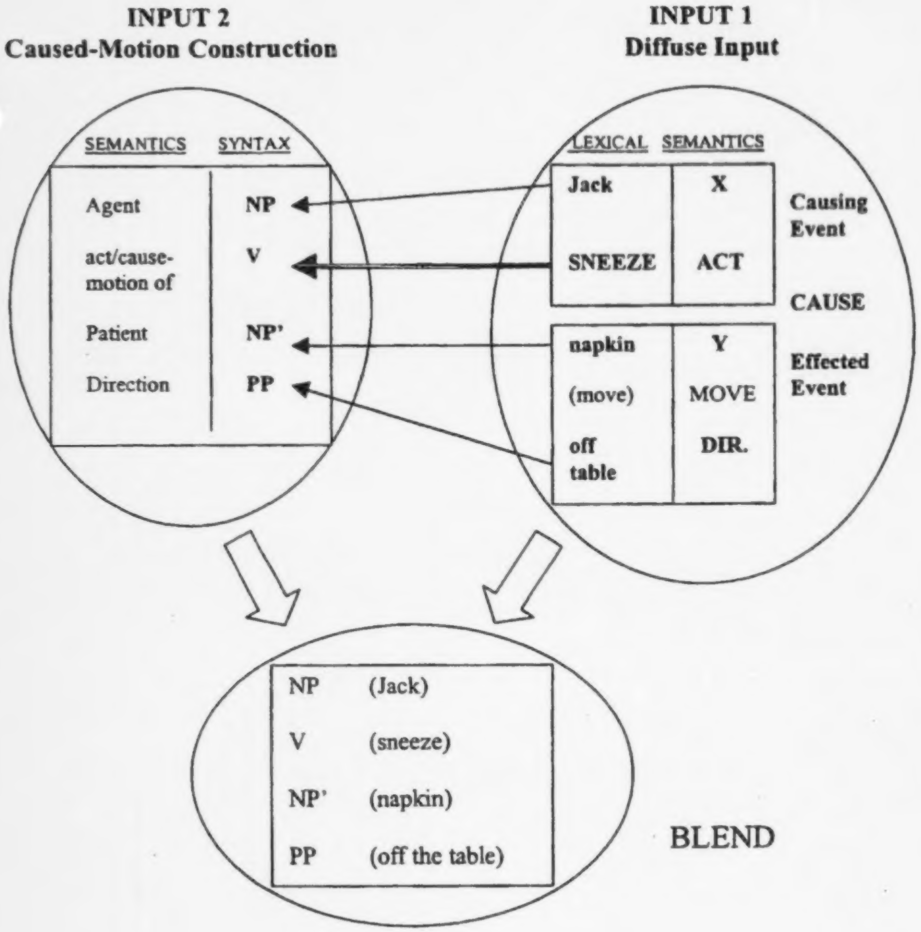
INPUT 2
Caused-Motion Construction
INPUT 1
Diffuse Input
SEMANTICS
SYNTAX
Agent
NP
act/cause-motion of
V
Patient
NP'
Direction
PP
LEXICAL
SEMANTICS
Jack
X
SNEEZE
ACT
Causing Event
CAUSE
napkin
Y
(move)
MOVE
off table
DIR.
Effected Event
NP (Jack)
V (sneeze)
NP' (napkin)
PP (off the table)
BLEND

Figure 1[4]

Based on the insights of Construction Grammar and Blending Theory, this paper will offer an account of modal verb constructions expressing evidentiality as the product of conceptual and syntactic blending processes. After some preliminary notes on modality and evidentiality in Germanic languages (3.1.), and a brief sketch of quotatives with modal verbs (3.2.), chapter 4 will deal with the compression patterns (metonymic tightening, compression of semantic roles) and projection schemas underlying these constructions.

3. Evidentiality, Quotatives and Modal Verbs

3.1. Modality, Evidentiality and Quotatives

The central focus of this paper is a conceptual phenomenon which, in a number of languages, is grammaticalized by means of modal verbs. In German, Danish, Swedish and a number of other Germanic languages, a speaker can use modal verbs to indicate that what is said has been told to the speaker ('hearsay', 'report'). These so-called QUOTATIVE constructions, which form a subtype of EVIDENTIALITY, take a specific place within the taxonomy of modality in many accounts on (epistemic) modal verbs (e.g. Palmer 1986, Diewald 1999, Fritz & Gloning 1997).

However, not all researchers agree on the classification of evidentials as a subtype of epistemic modality. De Haan (2001) convincingly argues that evidentiality and modality are not as strongly related as the analyses of Germanic languages might suggest. Whereas most Germanic languages (except for English) use modal verb constructions[v] for the realization of quotative evidentiality, most non-European languages do not. The question can be raised, then, whether evidentials should be categorized as a subtype of epistemic modality, simply because of the use of modal verb constructions. In this paper, however, we will restrict our attention to the German quotative construction(s) using modal verbs *sollen* and *wollen*. The analysis of the blending operations underlying this type of construction shows that through the compression of semantic roles and predicates the evidential event structure is integrated into the modal verb construction on the basis of an analogy mapping (4.1.).

3.2. Quotative constructions with modal verbs: Germanic languages

Unlike English, German has a grammaticalized construction for the realization of quotative evidentiality. The modal verbs *sollen* ('have to'/'must') and *wollen* ('want'), which are etymologically related to English *shall/should* and *will* respectively, have as one of their possible uses the indication of indirect utterance ('report', 'hearsay'). As examples (2) and (3) show, there is a significant semantic difference between both constructions:

(2) *Sie soll eine gute Sportlerin gewesen sein.*
"She is said to have been a good sportswoman".

(3) *Sie will eine gute Sportlerin gewesen sein.*
"She claims that she has been a good sportswoman".

In both cases, the speaker indicates by means of the modal verb that he is not the original source of the reported proposition and thus shifts away "any responsibility for the truth of the statement by asserting the level of evidence the speaker has for his or her statement" (De Haan 1999: 17). Still, semantically, the two constructions are distinct conceptualizations of report and, as the analysis below will show, the product of slightly different conceptual blending processes. In constructions with *sollen* (2), the original source of the utterance is not identical to the subject of the reported proposition. This means that, to use Langacker's terminology, the original source of the reported proposition in (2) remains *off-stage*: it is not mapped onto a syntactic position. In (3) however, the original source of the utterance ('**She** claims that she...') and the 'actor' of the reported proposition ('She claims that **she**...') coincide in the subject position. This identity in *wollen*-quotatives between the source of the utterance and the 'actor' of the reported proposition seems to determine another semantic difference between the two quotative constructions. The *wollen*-constructions as in (3) almost invariably activate an additional concept of doubt, viz. doubt on the factuality of the reported proposition.

Figure 2 illustrates the difference in the relational structure between *sollen* and *wollen*:

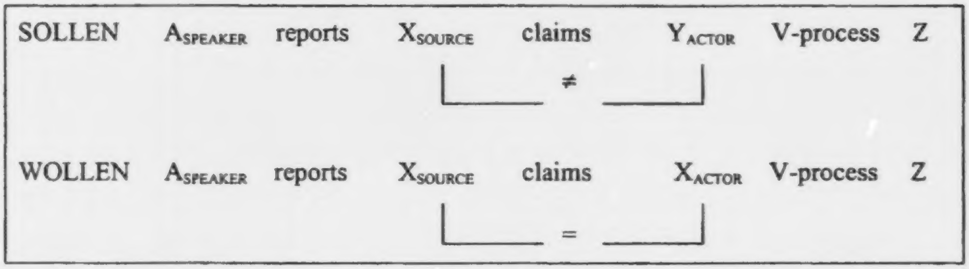
SOLLEN $A_{SPEAKER}$ reports X_{SOURCE} claims Y_{ACTOR} V-process Z
≠
WOLLEN $A_{SPEAKER}$ reports X_{SOURCE} claims X_{ACTOR} V-process Z
=

Figure 2

Especially the quotative construction with *sollen* seems to have etymologically related counterparts in quite a number of Germanic languages, as the examples in (4a) for Danish, (4b) for Norwegian, (4c) for Swedish and (4d) for Dutch suggest[vi]. For the evidential with *wollen* on the other hand, there appear to be only a few marginally represented cognates in Dutch (5).

(4) a. *Hun **skal** være meget venlig* (Allan, Holmes & Lundskær 1995)
"She is said to be very kind"
b. *Hun **skal** vist være i byen* (Strandskogen & **Åse-Berit** 1995: 29)
"She is said to be in town"
c. *Hon **skall** vara vacker* (Holmes & Hinchcliffe 1997: 293)
"She is said to be beautiful"
d. *De nieuwe film **zou** erg goed zijn*
The film is supposed to be very good"

(5) a. *De legende wil dat Robin Hood een held was voor de armen.*
"According to the legend, Robin Hood was a hero to the poor"

b. *Hij wil hebben dat er nog meer vluchtelingen op komst zijn.*
"He claims that more refugees are on their way"

4. Quotative constructions as products of conceptual blending

In looking at the two quotative constructions in a synchronic as well as a diachronic way, mechanisms of conceptual integration can be identified throughout the process of meaning extension (grammaticalization), in which both volitive and deontic modal verbs have developed a new, quotative meaning. Generally speaking, both grammaticalizations of reported speech can be described as the mapping of a diffuse conceived event (input 1; 'the speaker reporting somebody else's words...') onto a specific modal construction (input 2). We will be focussing, for both constructions, on the **compression** of semantic roles as well as predicates into a single syntactic structure. Furthermore, we will show that the development of both quotative constructions involves the interplay between volition and speech mental spaces via metonymic tightening.

4.1. Quotatives with German *wollen*

As clarified in 3.2., German *wollen* is only used as the marker of reported speech if the original source of the utterance at the same time is the sentence subject, i.e. if a person makes a claim about him- or herself (6).

(6) *Der Junge will das Haus verkauft haben*
'The boy claims that he sold the house'

In terms of the integration processes underlying this construction, a first input space is built up by the quotative 'event structure' as illustrated in figure 3, representing all relevant participants. In this case, we have a participant X_i (the quoted speaker) who claims that the proposition [X_i V-process Y] is a fact (Y stands for all complements and adverbials related to the verb). The index (i) indicates the referential identity of both semantic roles. The event structure is completed by the role of the speaker reporting the utterance of the quoted speaker. What emerges is a layered structure of (at least) two different mental spaces, where the mental space of 'speech' is embedded in the mental space of 'speech report'. The predicates are represented in small caps, the lexical equivalents appear in italics.

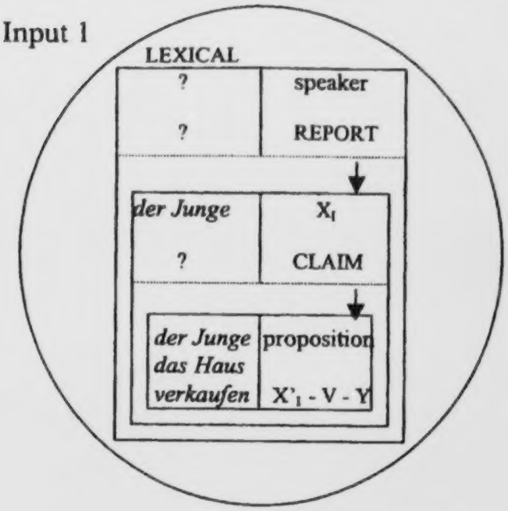
Input 1
LEXICAL
?
speaker
?
REPORT
der Junge
X_1
?
CLAIM
der Junge
das Haus
verkaufen
proposition
X'_1 - V - Y

Figure 3

Figure 4 represents the complex mapping between the conceptualization of the conceived event (input 1) and the syntactic construction 'available' for expressing the quotative meaning, in this case a modal verb construction (input 2). It shows that two kinds of semantic structure are being compressed into a single grammatical form. Apart from the compression of two semantic roles (supra), two distinct predicates are being mapped onto a single verb structure. The combination of a modal auxiliary with a perfect infinitive expresses the combined predicates of an **utterance** being **reported**. As such, this compressing predicate-mapping also holds for the other quotative with *sollen* as a modal verb (cf. 4.2.).

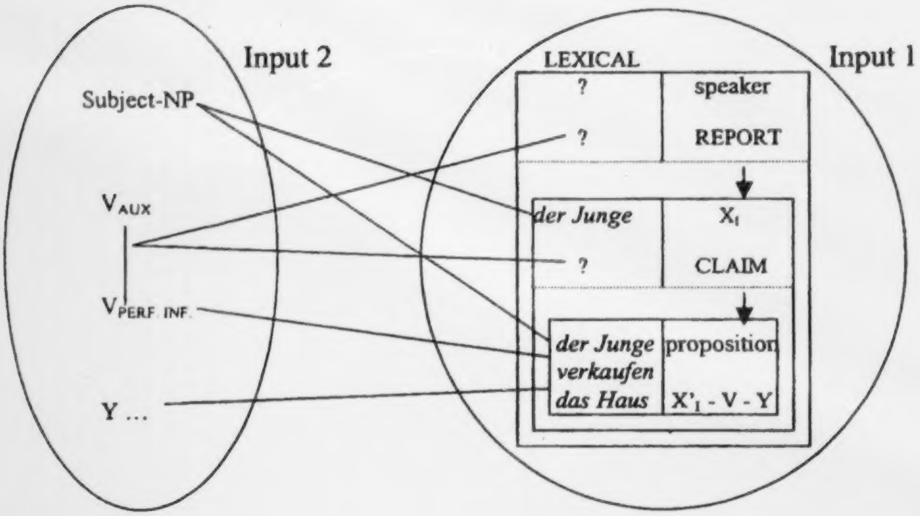
Input 2
Subject-NP
V_{AUX}
$V_{PERF. INF.}$
Y ...
LEXICAL
Input 1
?
speaker
?
REPORT
der Junge
X_1
?
CLAIM
der Junge
verkaufen
das Haus
proposition
X'$_1$ - V - Y

Figure 4

Although the identification of the semantic compression links between both input spaces reveals the relational structure of sentences like (6), it still does not explain *why* these two inputs are brought together in this construction. Why is it that a construction with the German modal verb *wollen* is used to encode a reported speech event? In order to explain this mapping as an **analogy mapping**, we need to look beyond the 'static', synchronic picture of these two spaces being mapped onto each other. Therefore, it is useful to analyze the development of this construction and look for processes of conceptual integration in a diachronic dimension as well.

By looking at the semantic evolution (grammaticalization) of the verb *wollen* as well as the gradual development of the combination of the modal verb *wollen* with a *perfect infinitive* into a quotative construction, it is revealed how and why both input spaces are mapped onto each other. It also sheds light on the specific *hybrid* function of *wollen* as the key point in this construction.

Diewald (1999: 424) shows that, already in Middle High German (13th century), the modal *wollen* has metonymically come to mean ‘to claim’ or ‘to assume’. She mentions an example from this period, in which *wollen* in the sense ‘to claim, to believe’ is used in combination with attributive clauses introduced by *dass* (‘that’). E.g. *sî wellent daz sî langer swer / danne diu von swerte ode von sper*: ‘They claim that the wound festers more than that of a sword or spear’ (Hartmann von Aue, 13th century). Thus, it appears that the metonymic extension of volitive modal verbs is an established projection at an early stage of the language. The metonymic relationship between the concepts of VOLITION and CLAIM, which can be assumed on the basis of historical linguistic data, is of major importance to the motivation of the mapping in modern German between the quotative *wollen*-construction and the conceived event of reported speech. Crucially, the conceptual structure of claiming something can be grounded in the notion of DESIRE (VOLITION), the object of which is not the realization of an action, but the factuality of the reported proposition[vii]. In figure (5) the horizontal arrow (➔) represents the metonymic structure of the predicate which triggers the mental space of the proposition being made by the sentence subject.

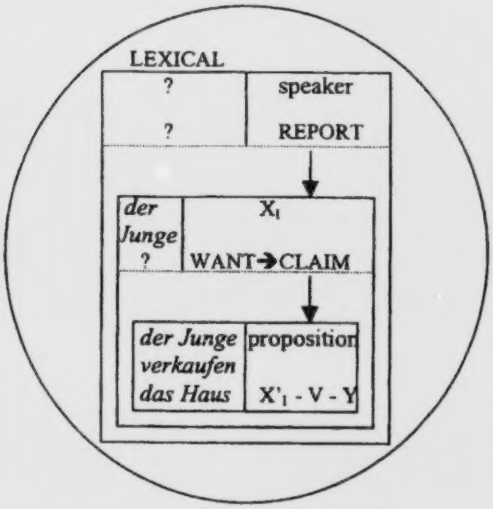

Figure 5

Although the modal concept of volition enters the picture of reported speech metonymically as the general cause of the utterance (the modal source wants to prove the factuality of a proposition), the mental space configuration as presented in figure 5 still does not fully account for the instances in which modal verb constructions with infinitive verb constituents are used as quotatives.

With respect to the development of the quotative construction consisting of a subject, modal auxiliary verb (*wollen*) and an infinite verb constituent, Diewald (1999: 427) notices that from the 16th century onwards, grammaticalized volitive constructions with *wollen* + Perfect Infinitive can be found in German. Around the same period in time, quotative instances of *wollen* + Perfective Infinitive are first found as well. With regard to the semantics of the infinitive complement, Fritz (1997: 299*ff*) indicates that in the 16th century, constructions with *wollen* and a (perfect) infinitive of verbs marking speech acts (*say*, *claim*, ...) are relatively frequent and could well have triggered the quotative use we encounter in modern German. As shown in (7), *wollen* in this use still has a volitive aspect to it, although it marks distantiation or even doubt from the part of the speaker as to the reliability of the source, exactly like in the modern German use of quotative *wollen*. These examples nicely show how in an early phase of this grammaticalization process, the quotative meaning is still supported contextually by other elements in the sentence such as the infinitive.

(7) a. *Doch will man sagen / das man ehest zwischen beiden partheien ein Zusammenkunfft halten wird.*[viii]
'Still, people want to claim that before long a meeting between both parties will be held'.

b. *Das will ich nur mal gesagt haben*!
'This is what I wanted to say' [Literally: 'This I want to have said']

The historical evolution of both the meaning structure of *wollen* and the constructions it appears in sheds light on the specific meaning of quotative *wollen* - Raynaud (1975: 96*f*) speaks of a **hybrid function** - in modern German. On the one hand, the source of the modality coincides with the sentence subject, thus leading to a predicate about the (volition of the) sentence subject. There is, just like in basic volitive modal constructions, a sentence subject that 'wants' something[ix]. On the other hand, the modal verb *wollen* in quotative use does have the wide scope of reference typical for evidentiality (and epistemic modality).

Through this diachronic perspective, the two input spaces of the linguistic blend (see figure 4) can now be linked via a **cross-space analogy mapping**. The analogy between both input spaces hinges, first, on the concept of VOLITION, which is expressed in both spaces (generic space) albeit in a different manner. In this respect, the hybrid function of *wollen* mentioned above can be described as a **compression** of the primary volitive meaning with its grammaticalized, quotative meaning. In input 2, the volitive meaning is automatically triggered by the sentence subject in combination with the finite modal verb *will*, whereas in the conceived event structure (input 1), volition is activated metonymically as the causal base of the profiled CLAIM-concept and hence as having a broader scope. This inner-space metonymic link is tightened in the syntactic blend. Second, by looking at the historical development of the quotative *wollen*-construction, the mapping between both input spaces can also be motivated by the notion of SPEECH, which is prominent in the event input of reported speech. Indeed, by looking at an early stage of the quotative construction (compare 7b in modern German), the concept SPEECH used to be instantiated by a perfect infinitive of verbs of communication in the infinite verbal position.

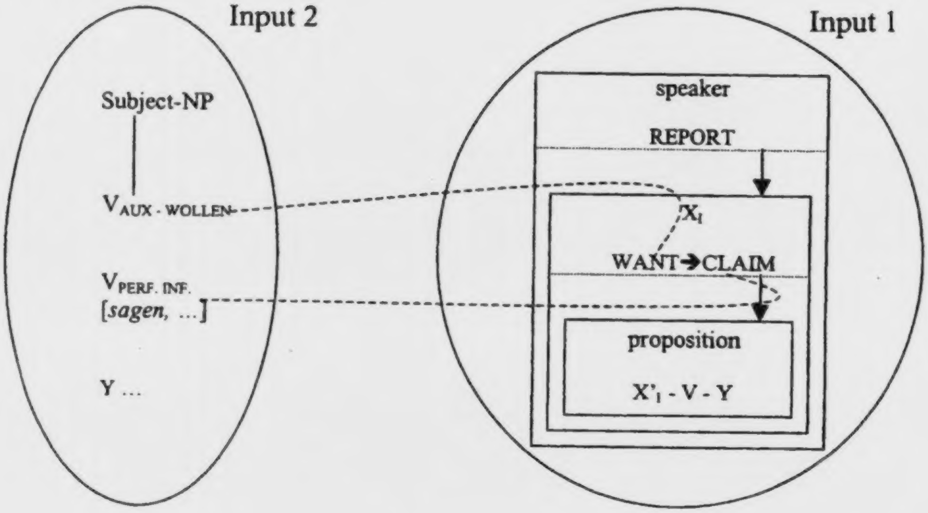

Figure 6

Figure 6 represents the motivating links as they can be identified between the conceived event of reported speech (metonymically related to volition) and the historical prototype of the quotative construction, in which a verb of communication appears in the perfect infinitive.

What is more, with regard to the construction under 7b, Diewald (1999: 229) claims that the notion of **doubt** typical for the quotative use of *wollen* might well be historically related to the combination of *wollen* with a perfect infinitive of communication verbs such as *sagen* ('say'), *behaupten* ('claim') etc. The modal verb in this case is mainly used to emphasize the statement it appears in. However, it is only a small conceptual step to reinterpret the construction as insisting on a fact of which the truth conditions are all but sure. In other words, the conversational implicature of doubt typically related to quotative *wollen* is projected from the input space of the modal verb construction [NP V_{AUX} NP V_{PINF}], and more specifically from one prototypical instance of this modal verb construction expressing insistence on a specific fact.

Figure 7, finally, represents the entire blend structure underlying example sentence 6, in which three kinds of mappings can be distinguished: first, simple **correspondence mappings** between equivalent elements of both input spaces (e.g. the verb *verkaufen* maps onto the perfect infinitive position; the *house* onto the complement position of the infinitive); second, **compression mappings** (indicated by bold connectors) through which the predicates and the semantic roles (source of utterance and subject of the reported proposition) are mapped onto a single syntactic position in the construction; third, **motivating mappings** on the basis of which the input spaces are linked to each other (indicated by the dotted line). In this example, since the infinitive is not a communication verb, only the concept of volition operates as motivating link between both inputs. By means of syntactic and conceptual blending, the complex perceived event can thus be compressed into a conceptually less taxing, human-scale pattern provided by the modal verb construction.

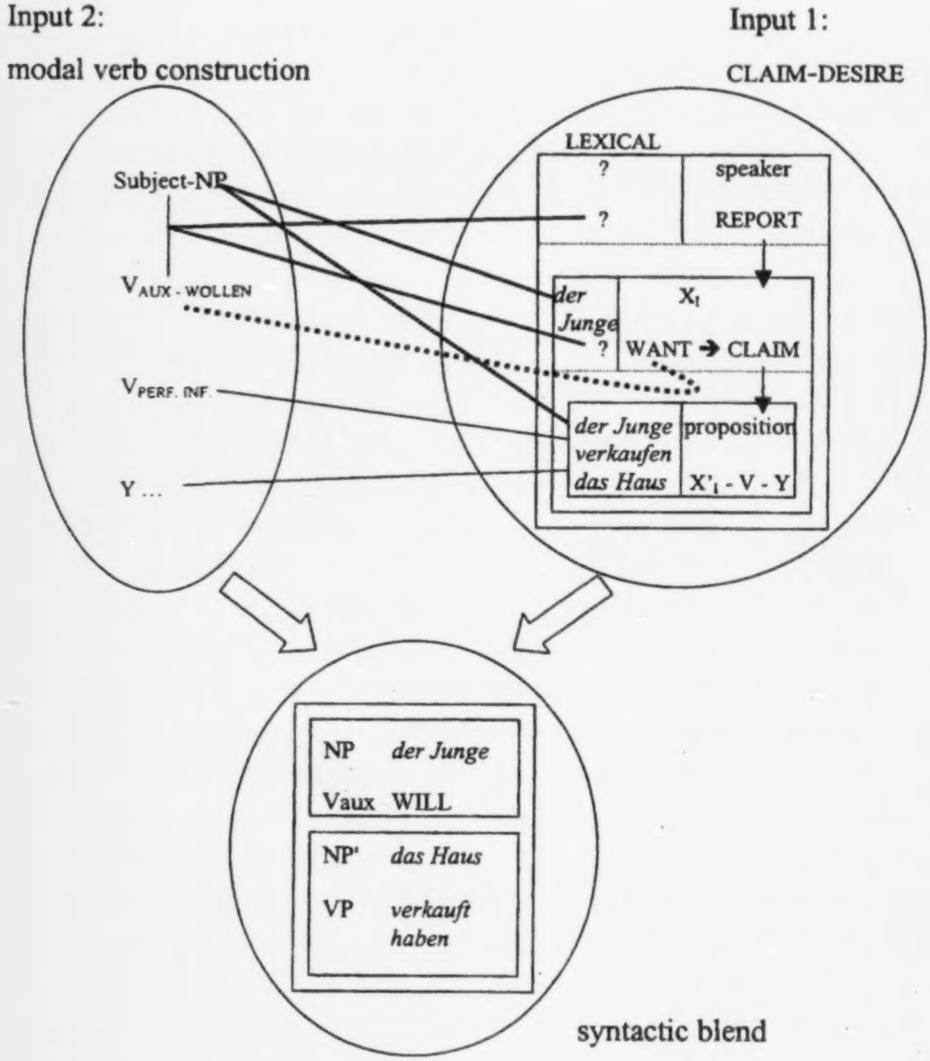
Input 2:
modal verb construction
Input 1:
CLAIM-DESIRE
Subject-NP
$V_{AUX - WOLLEN}$
$V_{PERF. INF.}$
Y ...
LEXICAL
?
speaker
?
REPORT
der Junge
X_1
?
WANT → CLAIM
der Junge verkaufen das Haus
proposition
X'_1 - V - Y
NP der Junge
Vaux WILL
NP' das Haus
VP verkauft haben
syntactic blend

Figure 7

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4.2. Quotative constructions with *sollen* and cognates in other languages

As shown in section 3.2., the German quotative construction with *sollen* has cognates in a number of other Germanic languages (Danish, Swedish, Norwegian, Dutch, Frisian). Consider the following two examples in German and Danish:

(10) a. *Sie sollen das Haus verkauft haben*
'It is said that they have sold the house'.
b. *Hun skal være meget venlig* (Allan, Holmes & Lundskær 1995)
'She is said to be very kind'[x]

The first input of the mental space configuration for quotative *sollen* is nearly identical to the one described for *wollen* in 4.1. Both constructions conceptualize a layered quotative 'event' of the type represented in figures 3 and 4. However, the fundamental difference between *wollen* and *sollen* lies in the referential relationship between the quoted speaker and the 'actor' of the reported proposition. Whereas in *wollen* this actor is linked to the quoted speaker via an identity connector (the i-index in figures 3 and 4, this is not the case in quotative constructions with *sollen*. In other words, the compression of semantic roles as described for *wollen* does not apply to *sollen* as well. Figure 8, based on example sentence (10a), illustrates this small but fundamental difference between quotative *wollen* and *sollen*. The compressing predicate-mapping of CLAIM and REPORT onto the verbal slot of the modal verb construction, as described for *wollen*, does hold for *sollen* as well.

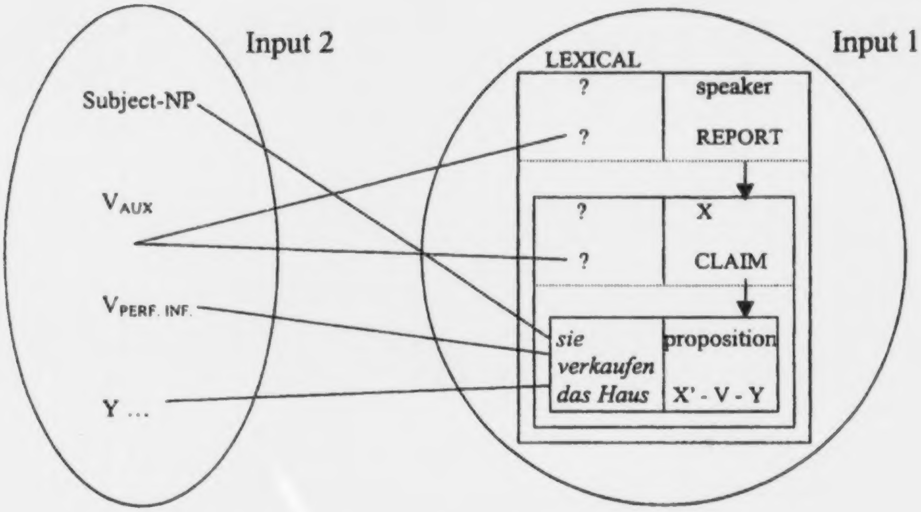
Input 2
Input 1
Subject-NP
V_{AUX}
$V_{PERF. INF.}$
Y ...
LEXICAL
?
speaker
?
REPORT
?
X
?
CLAIM
sie
verkaufen
das Haus
proposition
X' - V - Y

Figure 8

The question which arises next is, just as in the case of *wollen*, why the conceived event input is mapped onto the modal verb construction, in this case a construction with *sollen*. Bearing in mind the motivating mappings explored in 4.1. for *wollen*, viz. the analogical link between the concepts of volition in both inputs and the prototypical semantics of the infinitive complement in the input of the modal verb construction, we posit that the same motivational factors underlie quotative *sollen*.

As for the concept of volition, we agree with Diewald (1999: 225*ff*) that the quotative use of *sollen* historically is strongly related to the deontic use of the modal verb meaning 'have to, be obliged to'. In German, as in a number of other languages cited above, *sollen* is a counterpart of *wollen* as it is used deontically to refer to the participants subjected to a volition. E.g. in (11), the sentence subject Tom 'has to' work (*arbeiten*) late because the boss wants him to.

(11) *Tom soll heute später arbeiten (weil der Chef es so will)*
'Tom has to work late today (because the boss wants it).

Conceptually speaking, *wollen* in its volitive use and *sollen* in its deontic use have the same conceptual base from which different structure is profiled. Whereas *wollen* profiles the 'agent' of volition, the person who wants something, *sollen* primarily focuses on the participants subject to resp. undergoing the volition (cf. Tom in example (11)). In terms of mental spaces, one could speak of a difference in viewpoint space.

Since deontic *sollen* has in its conceptual base the notion of volition, the metonymic link between the concepts of VOLITION and CLAIM motivating the quotative use of *wollen* can be assumed to motivate quotative *sollen* as well, despite the fact that the source of the volition remains *off-stage*. Note that the shared conceptual base for *volitive* and *deontic* modality, thus for *wollen* and *sollen* in their basic use, has been recognized in early description of the language:

> "Die grundbedeutung von *sollen* ist die einer verpflichtung oder eines zwanges, der auf einem fremden willen beruht. Der inhalt der verpflichtung wird in den meisten fällen durch einen inf. ausgedrückt" (Grimm DWB 1854: vol. 16, 1468)
> ['The basic meaning of *sollen* is that of an obligation or force, which is based on a volition of a third party. The content of the volition in most cases is expressed by means of an infinitive']

In this respect, the picture of the first motivating mapping between the conceived event input and the modal verb construction with *sollen* via the concept of **volition** is reconstructed parallel to quotative *wollen* (4.1.). Once again, the metonymic relation between the concept CLAIM and WANT pertaining to the conceived event input is tightened in the syntactic blend.

The second diachronic-semantic argument we provided in 4.1. for the motivation of the mapping between the two inputs mentioned for *wollen*, viz. that the quotative meaning in its early uses emerges partly because of its frequent use in combination with verbs expressing communication, can be substantiated for *sollen* as well. In other words, in an early phase of the grammaticalization process, the quotative meaning is still supported by other contextual markers expressing speech.

Early attested cases of a possible quotative reading of *sollen* indeed support this argument. On the basis of examples from the 16th century (Fritz 1997: 299*ff*), we can neatly trace back the gradual process of grammaticalization of the quotative construction. Whereas in example (12a) an expression of speech constitutes the matrix sentence, thus lexically expressing the report, in (12b) *sollen* appears in the main clause and the indication of report in an adverbial clause. In (12c), the last but one phase in the grammaticalization process, the introduction of reported speech is nothing more than a parenthesis. At the moment the quotative meaning can be triggered without the support of additional contextual markers expressing speech, the quotative construction emerges as the product of conceptual blending.

(12) a. *Es ist die sage / das vorgestern in 300. Reutter vmb Gülich angelangt sein sollen.*
'It is said that the day before yesterday about 300 horsemen arrived in Gülich'.

(12) b. *wie man sagt solle der Graff allbereit das beste vnd schönste Silbergeschmied ...verschenckt vnd versetzt haben.*
'It is said that the Count has already given away and pawned his best and most beautiful silverware'.

(12) c. *dessen vortrag / wie man sagt / soll nach Rom vnnd Spannia / ... / gesand worden sein*

'His lecture is said to have been sent to Rome and Spain'.

Thus, the resulting picture for the motivating mappings between the conceived event input and modal verb construction with *sollen* basically is the same as for *wollen* (figure 6). The concept of VOLITION, which is activated metonymically in the conceived event input and which functions in the base of the semantics of *sollen* constitutes the primary motivating mapping. A secondary role is played by the concept of SPEECH which, apart from its obvious role in the event input of reported speech, historically may well have contributed to the grammaticalization of sollen in quotative modal constructions in German, because of the frequent presence of verbs expressing communication in the context of early attested cases (supra).

The quotative use of *sollen* differs from that of *wollen* in three respects. First, the compression of semantic roles in the subject of quotative *wollen* does not have a counterpart in *sollen*. The subject of the modal verb construction with *sollen* does not simultaneously refer to the 'actor' in the reported proposition and the original source of the reported proposition as does *wollen*. Second, the hybrid function we recorded for quotative *wollen* (4.1.), viz. the compression of the primary volitive meaning with its grammaticalized quotative meaning, does not apply to *sollen* as well. In its modern use as a quotative, the basic deontic reading of *sollen* is not activated simultaneously. Third, the notion of doubt inherent in the semantics of the quotative construction with *wollen* only has the status of conversational implicature in some cases of quotative *sollen*, but is not to be attributed to the use *in se*. This may be due to the fact that deontic *sollen* in combination with verbs of communication cannot be used for the insistence on a fact as described for *wollen*.

To conclude the analysis offered for quotative *sollen*, figure 9 represents the space configuration underlying example (10a). Parallel to figure 7 for *wollen*, three different line types can be distinguished. First, simple correspondence mappings between both inputs are represented by normal lines. Second, the compression mapping of predicates in *sollen* is indicated by bold connectors. And third, indicated by the dotted line, the motivating mapping links the concept of VOLITION present in both input spaces. The resulting picture, thus, only differs from the one sketched for *wollen* (figure 8) in some respects and a common basic mapping configuration can be seen to underlie both quotative constructions.

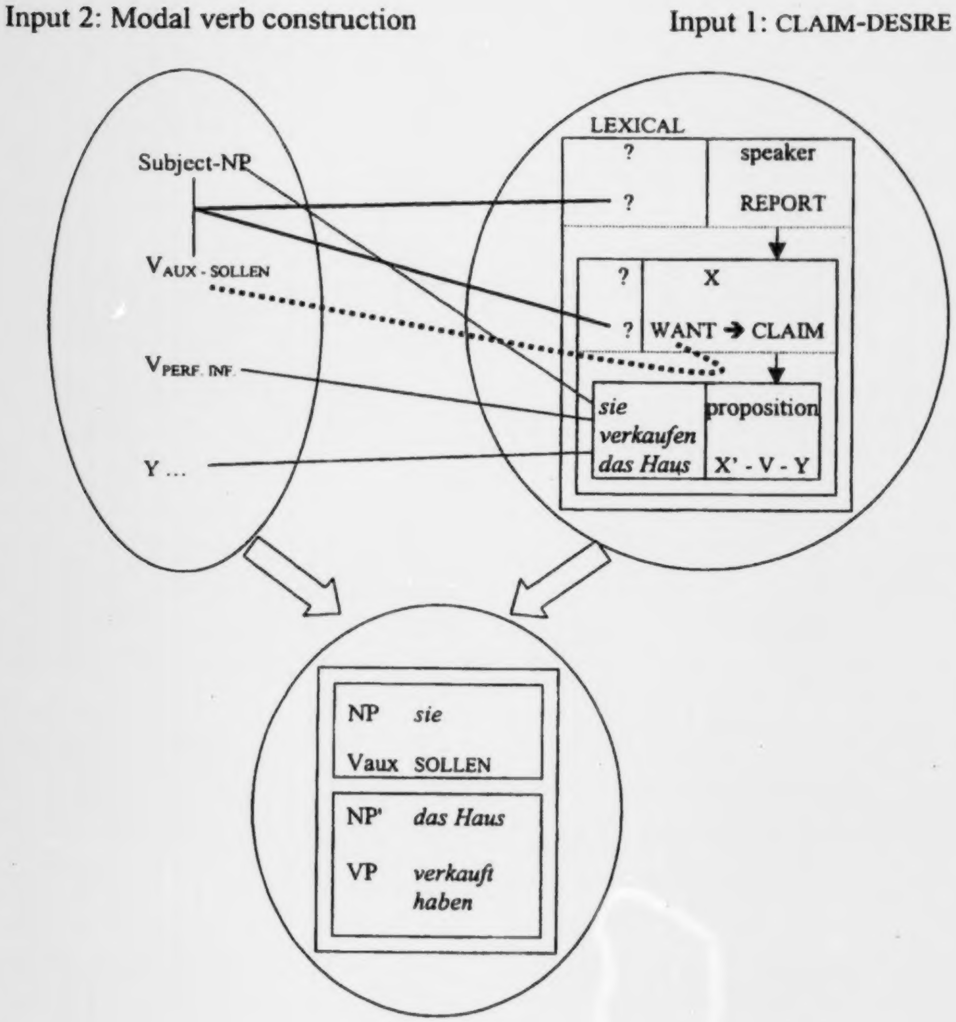
Input 2: Modal verb construction
Input 1: CLAIM-DESIRE
Subject-NP
V AUX - SOLLEN
V PERF. INF.
Y …
LEXICAL
?
speaker
?
REPORT
?
X
?
WANT → CLAIM
sie
verkaufen
das Haus
proposition
X' - V - Y
NP sie
Vaux SOLLEN
NP' das Haus
VP verkauft haben

Figure 9

5. Concluding remarks

The present study offers an account of German quotative constructions with the modal verbs *wollen* and *sollen* in terms of the compression and blending processes underlying this use. The analysis reveals a complex mapping configuration with compression of semantic roles (*wollen*) and predicate-compression (*wollen*, *sollen*) into the syntactic slots offered by the modal verb construction. A common basic mapping pattern is shown to underlie the quotative use of German modal verbs.

One of the central questions we raise is what motivates the emergence of these modal verb constructions as markers of quotative evidentiality. By using diachronic- as well as synchronic-semantic evidence, we show that the quotative use of *wollen* and *sollen* emerges mainly from the interplay of speech and volition mental spaces. The concept of volition, which is part of the inherent semantics of volitive *wollen* and deontic *sollen* is brought into the picture of reported speech through a process of metonymic tightening in the resulting syntactic blend.

From a broader perspective, the present article suggests that conceptual blending in some cases lies at the heart of grammaticalization patterns. The mapping of a conceived event input onto an existing construction, as shown for caused-motion constructions (chapter 2) and quotative modal verb constructions (chapter 4) frequently involves processes of compression, analogy mapping and metonymic tightening, not recognized as such in previous research.

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Notes

[i] This is an abridged version of a more extensive article. For the full-text version, please contact the authors. We are grateful to the following researchers for their helpful and encouraging reactions to a query posted via Linguist-List: Ferdinand de Haan, Stefan

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Dienst, Andreas Ammann, Tanja Mortelmans, Bert Cornillie, Douglas Lightfoot, Gerd Jendraschek, Dietmar Zaefferer, Henk Wolf, Christoph Gutknecht, Alexandra Aikhenvald, Kristin Melum Eide, Raja Solatie.

[ii] Henceforth F & T.

[iii] For a detailed analysis of integration networks prompted by noun phrases, see Sweetser (1999), Fauconnier & Turner (1996, 1998, 2002), Turner & Fauconnier (1995), Coulson & Fauconnier (1999), Coulson (2001).

[iv] The representation is based on Mandelblit & Fauconnier (2000).

[v] German also uses the subjunctive as a signal of reported speech.

[vi] Note that the Dutch verb etymologically related to German *sollen* is *zullen*. In quotative constructions in Dutch, *zullen* is only used in the subjunctive form *zou*. Since *zullen* is the grammaticalized marker for the expression of future tense, it is only used in the subjunctive in evidential constructions in order to avoid ambiguity between future reference and evidentiality.

[vii] Diewald (1999: 424) describes this semantic evolution of *wollen* as the evolution from "to want that something happens" over "to want that something is" to "to want (claim) that something is factual".

[viii] Example in Fritz (1997: 299).

[ix] Diewald in this respect (1999: 137): "Volitive Modalität hat mit Absichten des Satzsubjektes zu tun." ('volitive modality has something to do with intentions of the subject of the sentence').

[x] It should be noted that the English construction with a subject and a passive verb construction in itself constitutes what Bolinger (1961) defines as *syntactic blending* of personal and impersonal constructions. Bolinger does not discuss the English quotative construction in his account, but his analysis of adjectival constructions of the type "*He is hard to convince*" as the syntactic blending of impersonal "It is hard to convince him" and personal constructions of the type "He is homely to look at" does reveal a striking resemblance to the English quotatives. Underlying the English quotative forms as in (10b) is a "mapping of constructions filed side by side" (Granger 1983: 93), viz. the impersonal "It is said that,…" and the above-mentioned personal construction type "He is homely to look at". Thus, Bolinger, in his criticism towards transformational grammar, was one of the first to sense the importance of blending in grammar and syntax.

Blending and artistic creativity

Gilles Fauconnier

Extended abstract

Apparently unlike other animals, human beings do not entirely submit to the command of the present. Often, we activate in mind not only meaning that corresponds to the real present we inhabit, but also another range of meaning that is quite incompatible with it. For example, a human being trapped inescapably in suffering or pain may willfully imagine some other, quite different scenario, as a mental escape from the present. I know of no evidence that, in distress, dolphins or chimpanzees similarly launch elaborate escapist daydreams.

The way we think presents us with many related scientific puzzles: We can dream an imaginary pattern of meaning and perception while we are asleep and our sensory attention to the present is dampened. This ability may be general across mammals. We can activate a memory while we are awake, even if it is not crucial to making sense of the present. We can activate an imaginary scenario while we are awake, even if it is not crucial to making sense of the present scenario. We can blend a pattern of meaning that corresponds to the immediate environment with a remembered or an imagined pattern that we have activated. We can activate and blend two patterns of meaning and perception, both of which are supplied by memory or imagination, even if neither of them is closely related to the present.

Running two patterns of meaning or perception when we should be absorbed by only one, and blending them when they should be kept apart, is at the root of the way we think. This blending ability plays a fundamental and pervasive role in all aspects of human conceptual activity and is especially powerful in those mental performances that distinguish human beings: art, math, science, religion, advanced tool use, play, and advanced simulation.

In this talk, I will focus on the role of blending in human artistic creativity, with special emphasis on the literary and visual arts.

Fictive motion, perception and conceptual integration

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Abstract

In recent cognitive linguistics, the notion "fictive motion" (Talmy) has been coined to cover semantic phenomena that are correlated with non-veridical perceptual and cognitive phenomena, on the one hand, and with specific constructions in language on the other hand. Visual cognition and language work in tandem and display a parallelism.

Is this notion of "fictive motion" to be rendered adequately by the hypothesis and with the means of conceptual integration theory as proposed in THE WAY WE THINK (Fauconnier & Turner 2002), which in certain respects assimilate it to higher-order cognitive functions, or is "fictive motion" possibly rendered by procedures of more basic neuro-Gestalt-processing, which then are operative in the conceptual structures of language? Or is there a continuum ranging from Gestalt-structures to conceptual integration, intersected by phenomena like "fictive motion"? This paper sets out to envisage the relation between perception, fictivity, cognitive representations and conceptual integration.

Fictive motion

In recent cognitive linguistics the semantic phenomena "fictive motion", which displays the extensive cognitive representation of non-veridical phenomena - forms of motion - as they are expressed linguistically and as they are perceived visually, has been noticed by several authors, but mainly by Len Talmy ("Fictive Motion in Language and "Ception" : Talmy 2000 :I). Fictive motion in language is seen by Talmy in analogy with visual cognition and relies on two instances, the linguistic belief system and palpability in perception conjoined by the factor of veridicality. Fictive motion in language and perception is then a question of the assesment of

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veridicality, due to respectively two veridicality-factors: "factive" and "fictive". A perceptual phenomena is perceived factively at a higher level of palpability and perceived fictively at a lower level of palpability, according to Talmy's outlined palpability-axis conjoining perception and cognition, and the sentential representation of perceptual beliefs are assesed degrees of veridicality. The acces to the conception of fictive motion phenomena is then the pairing of veridicality and palpability. To the analogy comes a third conjoining factor: the overlapping systems model : a model that works from the assumption that different cognitive systems, in this case language and visual cognition, show partial overlaps, similarities and interpenetrations. The specific cognitive systems, that facilitate the analogy, are the cognitive systems of intentionality and of visual processing.

Talmy's account of fictive motion is rooted in standard issues in cognitive science; the question of the possible continuum between perception and cognition, and the corollary assumption about correspondence-theoretic definitions of truth in sentences in natural languages, that is the sentential representation of perceptual beliefs, but is of course a rendering of cognitive representations that is due to hypotheses put forward by cognitive linguistics, that is, sentential representations of perceptual beliefs are not necessarily a question of strict truth-conditions in the sense formerly defined by truth-value semantics and logic, and do not take the point of departure in the correspondences between sentential representations and a referent. Fictive motion-constructions is then a proto-typical instance of linguistic manifestations, that delineate and make clear how cognitive phenomena are processed and represented: Cognitive phenomena, which are not restricted to a one-to-one strict correspondence between a "factive" reality and language. The cognitive processing of fictive motion phenomena and of conceptual structure is a matter of imaginal schematizations or constructions.

Furthermore, the fictive motion phenomena are Gestalt-phenomena, which now have to be categorized among what can be qualified as cognitive phenomena - that is virtual or fictive perceptual phenomena; rendered as illusory, implicit or apparent motion - not seen as tangible or factive, but still having the quality of resisting in perception as a phenomena to be given phenomenological status. The difference from earlier statements of veridicality in language is, that in linguistic examples of fictive motion the referential dimension is now a question of not only veridicality, but a question of gradients of palpability. The fictive motion phenomena reside in phenomenological accesibility.

Exactly how is the parrallelism between language as a cognitive system and vision to be conceived? How do Gestalt-structures in visual cognitive processes show up in language, how do linguistic conceptualizations and perceptual mechanisms go together in cognitive phenomena, following Talmys maxim: visual sensing is understood and expressed grammatically? Detailed studies of the relationship between language and perception have shown that many virtual structures are linguistically encoded. Talmy's work on fictive motion show that an astonishing number and variety of schematic and virtual abstract Gestalts are linguistically expressed and play a fundamental role in our conceptualization of the world. The fictive "lines" and "motions" make the sentences describing scenes and states of affairs not only descriptors of real perceptual contents, but true "Organizing Gestalts".

Another question is how this overlapping between cognitive systems is functionally integrated in the brain. To posit the question of fictive motion this way is to set it into the context of relations between language and visual processing mechanisms in the brain: how are linguistic conceptualzations and perceptual configurations interrelated? In this sense, the discovery and explicitating of fictive motion goes back to the early discussion in cognitive science, manifested and put into a now classic form in Fodor 1983, which exactly sets up the question of the connection between a neurologically hardwired language processing module and a informationally encapsulated modular visual perceptual system that runs on veridicality, connected to a belief system represented in language. It goes with this idea that there remains a fixed neural architecture, distributed in modules in the brain, and modules for respectively language processing and perceptual analysis.

These questions can be summarized as questions about how conceptual procedures and perceptual mechanisms are linked.

Conceptual procedures and conceptual integration

An alternative way of explaining fictive motion phenomena in language and cognition is by appeal to the principles of conceptual blending, which optimizes another aspect of the fictive motion phenomena: the imputing of agentivity and intentionality to static sceneries, constituting a foundational cognitive system, that every sentient individual has and experiences, due to genetically determined neural configurations, and acommodate these factors to the principles of compression and double-scope integration. In this explanatory view the fictive motion constructions are due to conceptual prodcedure and mapping operations, that serve as mechanisms for integration of the perception of an agent's motion in the physical world and the conceptualization of an intangible, "fictive", entity moving along a line.

This is the main principle and source for the conceptualization of a moving entity, although there are different sources for the fictive motion phenomena.

The mapping operations operative in fictive motion constructions, that encode different integration-networks, are due to specific sets of governing principles, outlined in THE WAY WE THINK (FAUCONNIER & TURNER, 2002: Ch. 16 & 17): the maximizations of compression and strengthening of vital relations and the obtaining of the overarching goal: to achieve human scale. The principle of achieving human scale, in the explanation of the conceptualization of fictive motion, implies the construction and intensifying of intentionality in the blend.

Fictive motion constructions are explained in the series of steps of double scope conceptual integration, where static sceneries are integrated with dynamic scenarios, non-events imputed with intentionality according to the standard pattern of meaning construction EVENTS ARE ACTIONS, which impute and attribute intentionality to non-intentional events, this imputing is activated by systematic procedures of blending, that work in accordance with the governing principles that intensify and create vital relations. The crucial step is to impute intentionality to non-events, as in the case of fictive motion, where a static situation is blended with a dynamic scenario, so that the static scene has not only motion, but is also equipped with intentionality. The blending procedures do then integrate an INPUT: a moving static scenery and an INPUT: EVENTS ARE ACTIONS.

The explanation in Conceptual Integration Theory of Fictive Motion is in accordance with Talmys active-determinative principle, which is a cognitive principle, given to explain the cognitive procedures behind fictive motion-constructions, in particular the emanation-types of fictive motion, according to which the source and goal of an emanating fictive entity are conceptualized and correlated with an individuals exercise of agency.

This principle works in the emanation types of fictive motion constructions, and is taken as the consequence of the foundational cognitive system of agentivity. The individual's exercise of agency functions as model for the source of emantion. The particular form of agency that best can serve as such a model is the agent-distal principle put forward, where an agent affects an object, whether by close physical body scale encounter or by sensory intermediaries.

The explanations in conceptual integration theory of fictive motion do function in accordance with the noted mapping of an Agent's motion in the physical world onto the conceptualization of a moving intangible entity as in agentive visual sensory paths, in which the Experiencer projects a fictive line of sight from himself to the distal object, parrallel to the Agent's execution of factive motion toward the distal object. This mapping is either a result of ontogenetic learning during an individual's development, or evolutionarily incorporated into the perceptual and conceptual apparatus of the brain.

The explanatory account of fictive motion constructions in Conceptual Integration Theory does focus on the obtaining of human scale as a central requisite for integration. The processing of a full, dynamic, intentional human scale action is conceived as the governing principle for integration in the conceptual procedure of fictive motion.

Neuro-cognition

Now, dynamic motion imputed to static situations is one of the defining characteristics of fictive motion. This characteristic is an instance of the cognitive bias toward dynamism. The question is then whether the procedures of conceptual integration are seen as the optimal explanatory account for fictive motion phenomena or whether fictive motion phenomena can be accounted for by basic neuro-gestalt-processing or multi-modal gestalt binding. These two accounts differs whether to posit the perceptual mechanisms and conceptual procedures as completely integrated, or to posit a possible stratification of cognitive functions. If the last view is taken, conceptual integration must be seen as higher order functions and basic-level neuro-gestalt processing as a pre-requisite to the integrative and imaginative mechanisms as envisaged by conceptual integration theory. The scientific understanding of these issues relies on a precise neuro-scientific explanation and the hypothesizing of the neural basis for fictive motion. These hypotheses must furthermore also support an neuro-cognitive account of cognitive schemata.

In actual cognitive neuroscience two possible lines of research offer a possible understanding of the fictive motion phenomena and integrative mechanisms. One type of neuro-scientific research has as point-of-departure the strict modulatory point-of-view and another has the perspective of large-scale neuronal theories.

In "Fictive Motion in Language and "Ception" Talmy makes requests for possible neuro-scientific probes that can give further insight into the the cognizing of perceptual analogs to fictive motion. Recent findings in cognitive neuro-science do give some evidences for the processing of the Gestalt phenomena of apparent, illusory or implicit motion. In a series of recent brain-imaging studies by Kanwisher & Kourtzi (2000) and Senior et al. (2000) the perceptual phenomena of apparent, illusory or implicit motion has been investigated. The findings show that areas known to be activated in the perceptual analysis of "physical" motion is also known to be engaged in the processing and extraction of dynamic information from static sceneries. It appears that implied motion activates extra-striate motion-processing areas, area MT/MST (medial temporal/medial superior temporal cortical areas) also called V5 - an area known to be active during processing of physical motion. Though there are divergences in the ascription of influences from other brain areas in the perceptual analysis of motion and the adduced inference of motion in static sceneries, it is certain that the extra-striate cortex is central in mental representations of motion and that these representations are placed on the perception-cognition continuum. The findings in cognitive neuro-science of brain-areas activated in the perceptual analysis of motion do then seem to have a tendency to functionally localize the processing of motion and "fictive" or "apparent" motion in more or less modulatory terms - as such a possible module for motion/fictive motion could be posited. Furthermore, the neuro-scientific research into the perceptual analysis implied in the inference of motion must take into consideration the implication of a-modal semantic factors and of a-modal factors in visual perception. This seems to be one of the important issues in cognitive linguistics and in particular in cognitive neuro-linguistics. A-modal perception is in essence the problem of perceptual presence. The perceptual phenomena of fictive motion are directly linked to the percepton of a-modal perceived features of scenes, events and objects. A-modal perception is the perceptual mechanism that functions in pattern-completion. The Gestalt phenomenon pattern-completion is listed as one of the essential aspect of the mechanisms of conceptual integration. Furthermore, motion after-effects has been investigated in cognitive neuroscience. Talmy hypothesizes that this cognitive phenomenon is an analog to the frame-relative motion like: "I sat in the car and watched the scenery rush past me".

On the one hand, the agentivity system is at stake in sorting out the hierarchy of cognitive functions and on the other hand, the precise interconnected neural mechanisms of visual cognition and language processing seem to play a decisive role in determing the functioning of cognitive schemata. This would be the question of basic neuro-gestalt processing- that is the question of how neuro-phenomenological strategies extract dynamic information from the environment. The different types of fictive motion are connected to these strategies, which follow the criteria listed by Talmy : the discrepancy and correlation between a factive and static state of affairs and the fictive and dynamic state of affairs. In particular, the pattern path fictive motion type of construction is directly linked to the noticed phenomenon of apparent motion in Gestalt psychology. The perceptual phenomenon called apparent motion is the visual counterpart to fictive motion construction types like: "As I painted the ceiling (a line of) paint spots slowly progressed across the floor. ". In this type of fictive motion constructions physical substance are conceptualized as moving through space as a unitary Gestalt linear pattern, not imputed with intentionality, but rooted in perceptual mechanisms. In addition to this, the so-called stimulus-error-detection in Gestalt psychology which consist in describing what is known about the stimulus rather than what is seen to have direct bearings on Talmy's distinction between fictive and factive motion.

These findings go together with the so-called "ception"-continuum hypothesized by Talmy, with sets up a unitary category for cognitive phenomena, that covers both perception and conception/cognition, and which is differentiated in 13 parameters for cognitive functioning. These parameters runs along a palpability-axis, which is Talmy's cognitive-phenomenological way of rendering the afore-mentioned veridicality in perception in conjunction with the belief-system, manifested in language.

The referential dimension is in this sense aligned with the palpability-axis and by way of these distinctions is the phenomenology given evidentiality. This gives the parallelisms between a lingusitic representation that is believed to veridical and the concrete fully palpable apperance of the corresponding visual displaythe less veridical literal reference of the sentence and a less palpable associated image perceived on viewing the display. Four levels in the palpability-axis are distinguished: the concrete level, the semi-concrete level, the semi-abstract level and the fully abstract level. The cognizing of perceptual analogs to the fictive motion-type of construction resides on the semi-abstract level of palpabiliy, which is characterized as not fully concrete, not fully tangible, and this cognizing goes together with the parameter of actionability, the possibility of directing one-self agentively in different manipulative acts with respect to an entity, that is: the imputing of agentivity and intentionality, the imputing of cognitive dynamism to static scenes.

The question remains whether the motion-module in perception is fully informationally encapsulated as the Fodorian-style of reasoning wants it, or whether the pereptual analysis of motion is to be conceived as going together with other cortical patterns. The way to get a more complete scientific understanding of the fictive motion phenomena is to envisage the implicated cognitive schemata: these have a set of parameters: a Figure moving relative to a Ground/Reference object or the source-path-goal orientation like image-schematic structure encoded by closed class forms in language and clearly seen in the fictive motion constructions: are these due to, first and foremost, perceptual mechanisms in visual cognition - later the basis for cognitive schemata in language, or can a possible neural subsystem containing cognitive schemata be posited which is activated in both language and vision? The cognitive schemata are then meta-modal, active over different modalities and modules. If this is the case, then it might be that fictive motion in language and cognition is to be conceived as actually residing in more elementary or basic cognitive functions and then in stratified ways activated in higher order cognitive functions - whether due to attentional mechanisms or conceptual integrations or both.

Binding and Integration

The other line of cognitive neuroscientific research that candidates for the neuro-cognitive explanation of conceptual procedures is represented by Damasio's convergence-zone hypothesis (Damasio 1989), for the binding of entities in perception and recall, where different cortical areas are activated in synchrony for the integration of different inputs from different sensory channels in multi-modal cortices: the most spoken about topic in cognitive neuro-science and argued for as evidence for conceptual integration in THE WAY WE THINK. This question is a question of integration in brain of perceptual entities and events connected to motor interaction on the part of the receiver. Conceptual projections and mappings are posited as corresponding to neural co-activations and bindings.

The implications in Damasio's convergence zone framework are that early and intermediate posterior sensory cortices contain fragmentary records of featural components - "parts of entities" - and records of the combinatorial arrangement of features that defines entities ("local" or "entity" binding), but do not contain records of the spatial and temporal relationship assumed by varied entities within an event ("non-local" or "event-binding"). The latter records, the complex combinatorial codes needed for event recall, are inscribed in anterior cortices. In this perspective the posterior cortices contain the fragements with which any experience of entitites or events can potentially be re-enacted, but only contain the binding mechanism to re-enact knowledge relative to entitites. Posterior cortices require binding mechanisms in anterior structures in order to guide the pattern of multiregional activations necessary to reconstitute an event which can be reactivated, on the basis of appropriate combinatorial arrangements. Thus posterior cortices contain both basic fragments and local binding records and are essential for recreating any past experience. Anterior cortices contain non-local or event-binding records and are only crucial for reconstitutiton of contextually more complex events. Perhaps the most important distinction between this perspective and the traditional view, is that higher-order anterior cortices are seen as repositories of combinatorial codes for inscriptions that lie elsewhere and can be reconstructed elsewhere, rather than being the storage site for the more refined "multimodal" representations of experiences. Although anterior cortices receive multimodal projectios we conceptualize the records they harbor as a-modal. If the representations of an entity are distributed over distant regions of the brain, the mechanisms must be avaiable to bind together the fragments. A proposal for a new solution to the binding problem is outlined by Damasio and contain a set of premisses:

1. The neural activity prompted by perceiving the various physical properties of an entitity, occurs in a fragmented fashion and in geographically separate regions located in early sensory cortices and in motor cortices. So-called "integrative" cortices do not contain such fragmentary inscriptions.

2. The integration of multiple aspects of external and internal reality in perceptual and recalled experiences, depends on the phase-locked co-activation of geographically separate sites of neural activity within the above-mentioned sensory and motor cortices, rather than on a transfer and spatial integration of different representations towards anterior higher order cortices. Consciousness of those co-activations depends on their being

attended to, i.e. on simultaneously enhancement of a pertinent set of activity against background activity.

3. The patterns of neural activity that correspond to distinct physical properties of entitites are recorded in the same neural ensembles in which they occur during perception, but the combinatorial arrangements (binding codes) that describe their pertinent linkages in entities and in events (their spatial and temporal coincidences), are stored in separate neural ensembles called convergence zones.

4. Convergence zones trigger and synchronizes neural activity patterns corresponding to topographically organized fragment representations of physical structures, that are pertinently associated in experience, on the basis of similarity, spatial placement, temporal sequence, or temporal coincidence, or combinations thereof. The triggering and synchronization depends on feedback projection from convergence zones to multiple cortical regions where fragment records are activated.

5. Convergence zones are located throughout the telencephalon, at multiple neural levels, in association cortices of different orders, limbic cortices and subcortical limbic cortices, and non-limbic sub-cortical nuclei such as basal ganglia.

6. The geographic location of convergence zones for different entities varies among individuals but is not random. It is constrained by the subject matter of recorded material (its domain), and by the anatomical design of the system. Convergence zones that bind features into entitites are located earlier in the processing streams, and convergence zones that bind entitites into progressively more complex events anteriorly in the processing streams.

7. The representations inscribed in the abovementioned architecture, both those that preserve topograhic/topological relationships and those that code for combinatorial arrangements, are commited to populations of neuron ensembles and their synapses, in distributed form.

8. The co-occurrence of activities in multiple sites that is necessary for binding conjunctions, is achieved by recurrent feedback interactions.

The processing does not proceed in a single direction but rather through temporally coherent phase-locking amongst multipe regions. Although the convergence zones that realizes the more encompassing integration are placed more anteriorly, it is activity in the more posterior cortical regions that is more directly related to conscious experience. By means of feedback, convergence zones repeatedly return processing to earlier cortices where activity can proceed again towards the same or other convergence zones. Integration takes palce when activations occur within the same time window, in earlier cortices.

Higher order cognitive functions and neuro-gestalt processing

Damasio's framework for the binding problem; the convergence zone framework, is a way to formulate the neural basis for conceptual integration. Neural binding and integration are supposed to be the correlates to the mechanisms and principles of conceptual integration. THE WAY WE THINK posits this hypothesis in terms of both higher order cognitive functions as in the more elaborated blending operations in cultural cognition and in perception and sensation in which the central feature of the integration of cause and effect in perception; the perception avaiable to consciousness is the effect of complicated interactions between the brain and the environment. In perception, at the level of consciousness, the apprehension of cause and effect is seen as the functioning of integrative mechanisms that can be dubbed conceptual integration, and the cognitive representation of reality is due to the principles of blending.

This dual explanatory strategy in the framework of conceptual blending is the positing of cognitive procedures that makes the fallacy of misplaced generalization and by this operation makes basic neuro-gestalt processing an instance of conceptual integration. Rather, in the understanding of fictive motion phenomena, it is exactly a question of basic neuro-Gestalt processing. The recent investigations in cognitive neuro-science seem to demonstrate that the processing of motion and apparent motion in vision is functionally localized and anatomically segregated and in this sense there persist a conflict between the strict modularity-thesis and the large-scale neural theoris like Damasio's. Talmy's overlapping systems model appears to be a promising model for the investigation of the overlappings between cognitive systems and is an alternative to the strict modularity thesis. Exactly how is the parrallelism between language as a cognitive system and vision to be conceived? How do Gestalt structures show up in language? The crucial issue in the right neuro-cognitive understanding of the fictive motion phenomena is the right conception of the mapping operations active in the fictive motion constructions. Furthermore, the hypotheses put forward in THE WAY WE THINK do make integration the hallmark of cognition, but do at the same time run the risk of ignoring a stratification of cognitive levels with additional parameters: Are basic neuro-gestalt processing supposed to be identified with higher-order cognitive functions? Conceptual integration theory highlights the problem of the entrenchment of fundamental image-schematic structures in embodied cognition, which is the basis for motor-patterns and manipulability. What is embodied integration? It appears that the grounding of conceptual projections works as a reference to more basic perceptual mechanisms and cognitive procedures of motor interaction - patterns of agentivity and intentionality, which on a higher-order level gives rise to more "mental" blends in language and grammar. What exactly is the neuro-cognitive basis for fictive motion and in which way is this neuro-cognitive basis correlated with a neuro-phenomenology? How is the neural basis for language processing connected to visual cogntion? How are the imaginative capacities neurally rooted? A new emergent research field would undertake the precise mapping of convergences between anterior and posterior cortices. Basic neuro-Gestalt processing is primarily a matter of activation patterns in the posterior cortices, but of course connected to other brain-areas that have modulatory effects on perception. Conceptual integration does then appear to be a matter of activation patterns in anterior cortices and of pre-frontal activity. These question are not now fully understood, but is one of the issues to be decided in the coming development of cognitive neuro-linguistics.

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Gradient Blends: The Art of Discerning and Doing the Appropriate Thing

Katherine O'Doherty Jensen

Abstract

My area of research regards the sociology of food practices, and so I belong to a long line of sociologists and anthropologists who seek to explain patterns of human consumption. The major theories in this area are based on the assumption that explanation will regard a level of intelligibility that operates behind the backs of social actors. Functionalists have thus focussed on the influence of social structure, materialists on economic structure, and structuralists on symbolic structure. In this company the work of the anthropologist, Mary Douglas, has been somewhat deviant. Despite maintaining a clear focus on the relationship between symbolic and social structure, she has maintained a conviction that it must be possible to account for the cognitive 'underpinnings' of social practices. For this reason her work through several decades included attention to such issues as categorisation, rule following, implicit meaning and metaphorical cognition (Douglas, 1996, 1992, 1984, 1975, 1973). I share her concern to understand the role of human agency in the construction of food culture, and indeed this concern can no longer be regarded as deviant. The need to account for the relationship between agency, culture and 'structure' has been widely recognised in recent decades, in tune with what is now called the 'cultural turn' in social theory (Hall, 1997). I have become convinced that blending theory has an important contribution to make to understanding the character of agency. This paper explores a few aspects of that contribution with specific regard to a puzzling set of data.

The key issue concerns social actors' conceptions of any given practice as being appropriate or inappropriate. The data regard what people do and what they avoid doing, as observed or reported. Some data regard actors' descriptions of their preferences and expectations, how they perceive the preferences of others, how they react to deviations from expected practices, and the importance of doing something one way rather than another. But they do not include actors' own accounts of the meanings of these practices, these being rarely stated by those who perform them. The meaning, if any, thus tends to remain implicit, and in some instances actors deny that any particular meaning is at issue. One such case is analysed in the

following on the working assumption that a blend underlies any such set of practices, and that it is expressed in what people do rather than in anything they may have to say about the meaning of what is done.

The case material: gendered food preferences and practices

The selected case material concerns observations of gendered food practices. The practices of men and women differ in regard to the production of food and its preparation in the household, the division of labour being strongly gendered. Differences are less apparent in regard to consumption, with the exception of those societies in which gendered consumption is regulated by taboo. It nonetheless transpires from social research, dietary studies and epidemiological surveys, that food consumption in industrialised societies is also clearly gendered. The pattern most frequently identified concerns women's consumption of fruit and vegetables, as contrasted with men's consumption of meat (Bourdieu, 1984; Fiddes, 1991; Jansson, 1993; Fürst 1995; Lupton, 1996).

A review of several hundred empirical studies, which were undertaken in the period from the mid-1970s to the mid-1990s in European countries, the United States, Canada, Australia and Japan, confirms that a wider range of foods are implicated in gendered patterns of consumption (O'Doherty Jensen & Holm, 1999). Women prefer and consume more fruit, vegetables, the white meats of poultry or fish, dairy products such as yoghurt and cottage cheese, and sweet products such as biscuits, chocolates and puddings. It is found that they prize salads, omelettes, soups, sandwiches and vegetarian dishes, and they regard any of these as dishes that can suitably comprise a main meal for their personal consumption. This pattern does not obtain among men. They on the other hand prefer and consume more alcohol, especially beer and the stronger spirits, all meat products, especially red meats, as well as potatoes. Studies undertaken in a number of countries reveal a distinct preference among men for main meals that comprise meat, gravy and potatoes. There is, however, one exception to these trends. Several studies indicate that men who have a higher education or a relatively higher income tend to have eating habits that resemble those of women rather more than those of other men (Murcott, 1983; Prättälä *et al.* 1992; Sweeting *et al.* 1994; Pederby, 1995).

Perhaps the most surprising finding to emerge from this review was that both men and women in widely dispersed regions discern approximately similar foods and beverages as being 'feminine' or 'masculine', respectively. This conclusion does not immediately lend support to widely held assumptions of cultural relativism. But the pattern is clear, despite differences between the food cultures of these regions. Apart from data regarding consumption behaviour, it can be inferred from avoidance behaviour and sanctioning, and is also confirmed by verbal reports of preferences. In a study based on focus group interviews, it was found that participants were agreed as to which foods were 'masculine' and which 'feminine', but they were unable to agree upon the reasons why this might be so (Lupton, 1996).

These data thus represent one instance of a seminal problem in the linguistic, cognitive and social sciences: how are people able to abide by a set of rules without being able to offer any coherent account of what the rules are? In this instance, there is the further problem: can we account for the fact that such discernments are transcultural, or should we assume that all of the regions at issue share some common cultural traits? The specific question for analysis is this: given these data, can we account for discernments of gender-appropriate food preferences and practices in a systematic manner? Due to the character of the data, I have found it fruitful to introduce the concept of 'gradient blends', and to distinguish the mapping involved from the more familiar kinds of mapping in 'conceptual blends'. Something along these lines is intimated by Fauconnier and Turner (2002: 105), but not developed.

Gradient blends in the culinary domain

Images of spatial continua underlie folk descriptions and appraisals of appropriate and inappropriate social practices. Inappropriate options are described as ones that either commit the error of *going too far* or that of failing to *go far enough*. Some of these options are deemed *wide of the mark, way out* or *over the top*, while others fall disappointingly *below the mark*. An appropriate option on the other hand is described as *fitting*. It is based on a discernment of just *how far* is not going *too far* (Mayol, 1998:21), and it *hits the mark, the nail on the head,* is deemed *spot on*. I wish to introduce the idea that the discernment of gradient difference is intrinsic to the appraisal of non-discursive social practices and that double scope or multiple blends (Fauconnier & Turner, 2002) underlie discernments of these practices as being more or less appropriate. 'Non-discursive' in this context refers to gradient meanings that are not verbalised and may or may not be conceptualised.

Gradient blends

A gradient difference refers to the characteristic of being 'more or less' as opposed to that of 'either/or', that is, the characteristic of varying in grade, degree, level or quantity as opposed to that of kind. It is here proposed that gradient differences are discerned in everyday life in respect of levels of affect, kinaesthetic feelings and motor movements, the contents of percepts or images, as well as entities that are categorised and named. Perhaps the main application of this term in cognitive semantics refers to the internal structure of a graded category, according to which degrees of membership are differentiated (Lakoff, 1987). Michaelis (1996:216) identifies a 'scale' as underlying a particular kind of graded category, within which entities are ranked and relegated to subclasses according to the degree to which they manifest a given property. The latter usage lies close to that employed here in so far as it will be argued that the social practices under consideration are based upon implicit rankings of entities.

A gradient perspective is imposed upon any set of categorised entities by ranking them according to one or another criterion. Just as anger can be more or less intensely felt, a movement felt or perceived to be more or less swift, a sound heard or recollected as being more or less loud, so variants of a thing or different things can be deemed to be more or less desirable, events to be more or less important, people to have more or less status or income, etc. Accordingly, the inputs to a gradient blend may comprise feelings, percepts or images, whether or not these phenomena are conceptualised, as well as entities that are categorised and named. The gradient blends under consideration here have inputs of the latter kind. These inputs have a conceptual structure that regards one or more entities as distributed on a continuum or 'scale', the endpoints of which are identified by means of binary categories. For example, if events can be either 'important' or 'unimportant', the discernment of just how important any particular event is deemed to be will regard the issue of precisely where on a continuum of levels of importance-unimportance that particular event *fits in*. The discernment of the gradient meaning of that event thus regards its location within the 'space' between binary categories.

Although it is clear that discernments of grade are expressed verbally by such means as the uses of adverbs, subcategories or repetition, it is not clear to me to what extent the 'points' or 'intervals' on gradient continua, or relations between them, are usually identified by means of language. As a non-linguist, my impression is that this is not the case, quite specific domains of discourse such as those of economic exchange or musical notation – each of which is based upon the construction and social recognition of an analogical medium of communication – being exceptions to the rule. I am in no doubt, however, that non-discursive social practices can and do express any of the finer distinctions of such gradient discernment, for example by means of the relative loudness of clapping that contributes to a given level of applause, the precise depth of an acknowledging bow, the grade of foods and drinks that constitute a given menu or the degree of formality with which it is appropriately consumed.

The distinguishing feature of gradient blends regards the character of the mapping between inputs (see *Fig.* 1). In contrast to conceptual blends, it is not conceptual structure that is mapped from one input to another. Rather, it would seem that all gradient blends have the same generic structure in which the alignment between inputs regards relations between grades, as distributed on at least two continua (*cf.* Sweetser, 2000:322). What is mapped from one input to the other is the relative position of an entity or entities on one continuum to the relative position of one or more entities on another continuum. The following analysis seeks to demonstrate that gradient blends underlie discernments of which kinds of food are appropriately consumed when and by whom. Since the latter discernment rests upon the composition of a given cuisine, the question of which foods appropriately belong to which occasions is considered first.

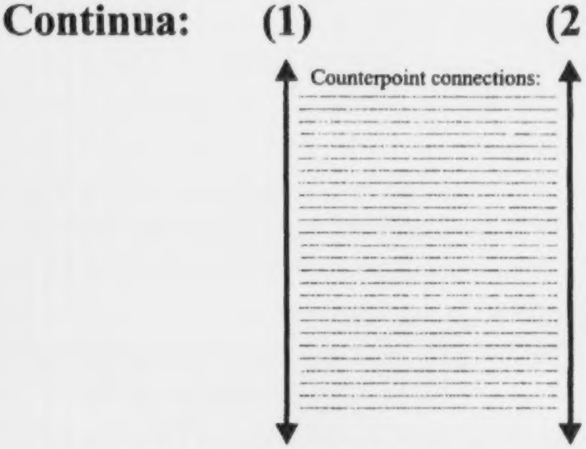

Figure 1: The generic form of related continua in gradient blends.

Grades of events are grades of foods

One of the many symbolic functions attributed to food is that of distinguishing recurring cycles of events: morning, midday and evening are distinguished from each other, workdays from weekends, the weekly cycle from annual occasions such as birthdays as well as once-in-a-lifetime occasions (Douglas, 1975; Sellerberg, 1978). The 'meal' is the social construction that functions as a marker of these events in so far as it concerns rule-bound combinations and sequences of items to be consumed. It will be readily agreed that the cognitive underpinnings of this accomplishment regard the mapping of kinds of food and kinds of event on to each other. Thus for Americans a roast turkey signifies Thanksgiving. Where I come from, however, the same entity signifies Christmas. But the purpose of the present analysis is not to trace any of the vast number of such conceptual mappings that tend to be specific to a given culture, although we

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now have excellent examples of how this might be done (Turner, 2001). From the point of view of their gradient aspects, what is noteworthy about these mappings is the fact that the same entity is a marker of a more important occasion in both social settings. In order to simplify the following analysis of gradient as distinct from categorial meanings of food, only the relatively widespread and familiar three-meal system, comprising the daily cycle of 'breakfast', 'lunch' and 'dinner', will be briefly considered.

Different degrees of importance are commonly attributed to the three eating events of the daily cycle, least to the first meal of the day and most to the evening meal. The concept of a 'meal' is itself constituted by a multiple blend. While this cannot be explored here, it should be said that the relative importance of these three events can be inferred from a variety of social practices, each of which concerns gradient variables. Among these are: the uses of household resources of time, labour and/or money, the complexity of dishes served, the formality with which they are consumed, the duration and location of the event and the numbers of participants. The hypothesis that a gradient blend is at issue in the discernment of which combinations of food and beverage appropriately belong to each of these events, rests on the further supposition that kinds of food and beverage are also graded. When I began to look for data that could elucidate the ways in which consumers rank order foods and beverages, I was surprised to discover that food groups are ranked in a manner that is transcultural (O'Doherty Jensen *et al.* 2001).

Sociologists of food have long been familiar with the view that hierarchically ordered norms obtain in Western food cultures, according to which animal products are most highly prized, red meats being prized above white meats, followed by other animal products such as eggs and dairy produce. These are followed by fruit, leaf vegetables and root vegetables in that order, while cereal products occupy a place at the bottom of the culinary scale (Twigg, 1984). However, economists' analyses of aggregated data, regarding the successive phases of consumer demand that have followed upon rising standards of living during the past 50 years, reveal that this same pattern has obtained in all parts of the globe (Grigg, 1999). Demand patterns do indicate dramatic geographical differences in levels of consumption of animal products (especially the flesh of animals, poultry or fish) as well as cereals, but not exceptions to the pattern whereby animal foods are ranked above vegetable foods and both are ranked higher than cereal foods. Moreover, historical data (Grieco, 1996) lend weight to the view that what is at issue is a global pattern that is far from being a recent phenomenon. While it would be tempting to speculate about why we consumers rank order foods in this way, for the present purpose it suffices to ascertain that we do so in a similar manner. On this basis, the mapping of grades of food and grades of events on to each other can be illustrated by means of a single gradient blend (see *Fig.* 2).

A few familiar cross-cultural patterns can illustrate the claim that grades of food and grades of events are mapped on to each other in the conventional food practices of industrialised societies. Firstly, the foods deemed appropriate to the least important meal of the day are those to which least culinary status is attributed. These are cereal products, which also lend their names to a wide variety of breakfast dishes. Secondly, cereal products (bread, pasta) are commonly retained in the meal that occupies a mid-point on the scale of importance, and they are accompanied by any of a range of products drawn from the middle or upper ranges of the culinary scale. It is the latter that constitute the centrepiece of these dishes, and frequently confer their names upon them as their distinguishing feature (beans on toast, tuna on rye, ham sandwich, etc.). Thirdly, while cereal products are retained in secondary courses (if any) of the most important meal of the day, they are commonly omitted in its main course. The practice of using potatoes as the staple ingredient of that course has been widespread during the last couple of centuries (a pattern that may be changing again). The accompanying product, vegetables, is also drawn from the middle range of the culinary scale. Neither root nor leaf vegetables confer their names on these dishes, the foods that constitute their centrepiece being traditionally drawn from the highest range of the culinary scale. These are meat products, the relative importance of which is underscored by the fact that meat always confers its name upon any dish in which it constitutes an ingredient (Rosenberg, 1990).

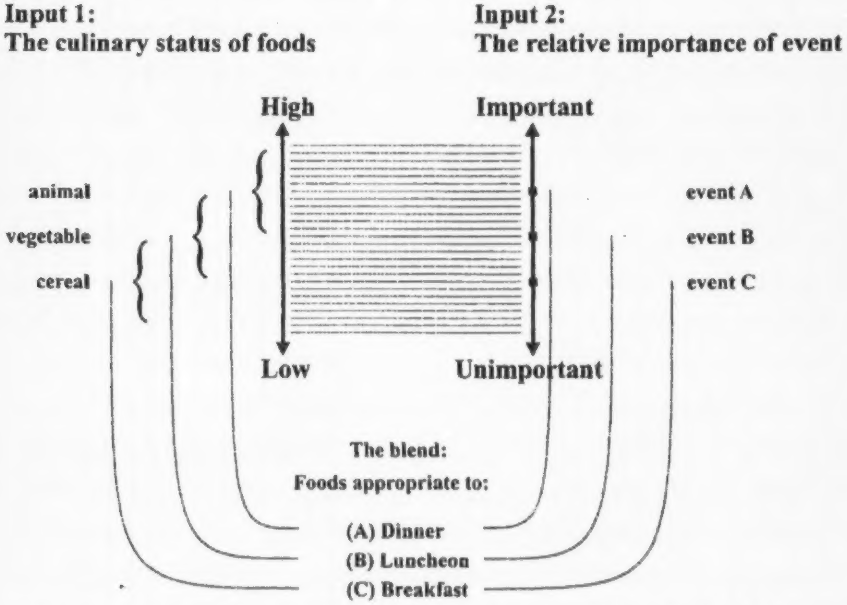
Input 1:
The culinary status of foods
Input 2:
The relative importance of event
High
Important
animal
vegetable
cereal
event A
event B
event C
Low
Unimportant
The blend:
Foods appropriate to:
(A) Dinner
(B) Luncheon
(C) Breakfast

Figure 2: Meals distinguished by means of a gradient blend: Grades of events are grades of foods.

While all meals include products from at least two of these food groups, the variants of any given meal are rendered superior by including products located at higher ‘points’ of the culinary scale, and inferior by including lower status items. Thus, a breakfast may be rendered superior by the inclusion of such items as fruit, cheese, eggs or bacon, while a lunch is rendered superior by including meat and excluding cereal products – that is, more closely resembling a variant of dinner (lamb chops and potato salad, etc.). A dinner on the other hand is rendered inferior by including inferior meat products (sausages, sliced bacon, etc.), but more so by excluding meat altogether. In British cuisine it has been shown that the meal thereby ceases to be regarded as an exemplar of a ‘proper’ dinner (Murcott, 1982), the same function being played by potatoes (Douglas & Nicod, 1974). Finally, while grades of beverage are poorly illuminated by social research, it is clear that alcohol is one of the usual markers of relatively more important occasions (Charles & Kerr, 1988). So much so that a festive occasion without alcohol might be widely deemed to fall *below the mark*. Perhaps the modern conception that it is not *fitting* to consume alcohol too early in the day reflects an inverse inference to the effect that this is not the time-span of the daily cycle to which superior beverages appropriately belong. On the basis of these systematic patterns, I submit that discernments of which kinds of food appropriately belong to which kinds of event are undertaken in non-arbitrary ways by means of a gradient blend.

Grades of foods are grades of people

It is now possible to identify the non-arbitrary and systematic character of discernments of foods and beverages as being gender-appropriate or otherwise. The supposition that will not be examined here, but which is thoroughly documented by social research, is that according to any of a wide range of criteria more social status is commonly attributed to men than to women. In so far as gendered food preferences are the product of a gradient blend, we might then expect to find a pattern whereby grades of culinary and social status are mapped on to each other. This is precisely the pattern that is documented by empirical social research with regard to gendered food practices. In each case, the foods that both men and women deem appropriate to men occupy a point on the culinary scale that is, so to speak, one step higher up than those deemed appropriate to women. This pattern regards: the composition of main meals as contrasted with secondary meals (sandwiches), the main course of that meal as contrasted with secondary courses (soup, fish, pudding/dessert), the centrepiece of the main course as contrasted with its trimmings or side dishes (vegetables, salad), meat products in general as contrasted with other animal products (eggs, dairy produce), red meats as contrasted with white meats (poultry), and alcoholic as contrasted with non-alcoholic beverages.

On this basis we may wish to claim that 'masculine' and 'feminine' foods function as graded categories in much the same way as 'breakfast', 'lunch' and 'dinner'. A fuller exploration of this issue, which cannot be undertaken here, would call for consideration of the boundaries of those categories, expressed for example in such concepts as those of a 'proper dinner', a 'proper meal' (*cf.* Murcott, 1982; Charles & Kerr, 1988) or the hybrid concept of 'brunch'. For the present purpose it must suffice to note that the former set of categories, in contrast to the latter, are not explicit categories of discourse. We cannot and do not walk into a supermarket as we would into a department store asking for the ladies' or men's department. Discernments of 'masculine' and 'feminine' foods and menus serve to guide appropriate practices in other ways than by the apt use of language. Nevertheless, given the human propensity to blend, food preferences are easily discerned as being gender-appropriate or otherwise so long as two conditions are fulfilled: products, dishes, courses and meals are ranked within a given cuisine and differential status is accorded to men and women within a given society. Furthermore, any such discernments are likely to be reinforced and confirmed by observing patterns of behaviour that rest upon similar discernments made by other people. In so far as such behaviour grounds expectations of the manner in which the incumbents of given status positions should behave it will be constrained by social norms. However, while it is clear from social research that such norms are operative, it is equally clear that people generally find it difficult to account for their discernment of appropriate practices and specific options in verbal terms. It would seem likely that the main reason for this is due to the non-discursive character of the mapping operation in gradient blends.

The mapping operation in a gradient blend is analogical. The grade of one or more entities on a given continuum functions as an analogue of the grade of one or more entities with which it is compared. For this reason, expressions of gradient meaning call for the use of an analogical medium of communication, just as interpretations of gradient meanings are interpretations of analogical display. Among such media are the human body and the social uses of goods. It follows that the analogues at issue in human communication of gradient meanings are biologically grounded and/or products of human insight. As such, they will be subject to more or less voluntary control and be constrained to a greater or lesser extent by social norms. There are therefore a number of reasons why a gradient blend, as performed, may be relatively easily understood from one culture to another.

Among these are: the non-discursive character of the mapping operation, the non-discursive character of its medium of expression, and the non-cultural or transcultural character of its inputs (if either of these latter conditions are fulfilled). For example, most rituals of greeting incorporate analogue displays of the level of friendliness-unfriendliness at issue as well as each of the interactant's discernments of their social status relative to each other. The width of a smile, the relative physical distance between interactants, the occurrence, duration and formality-informality of touching or speech, and the ascription of initiative to one or both parties, are relatively stable inputs to such rituals from one culture to another. Similarly, the relative stability of inputs underlies the transcultural character of the blend whereby grades of food and grades of people are mapped on to each other.

The stability and persistence of a gradient blend are dependent on the stability of the rankings that constitute its inputs. Those at issue in the present case have by no means remained unchallenged. The widespread conception of women as second-class citizens relative to men on a gradient scale of human beings has been severely challenged, not least since the 1960s, with some success it would seem among women and among men who have higher levels of education (Lorber, 1994). Similarly, dietary recommendations have in effect challenged the culinary status attributed to specific foods, with some success in regard to the relative ranking of such items as red meats and fish, as well as eggs, for example. In this light, the pattern whereby more highly educated men tend to exhibit 'feminine' food preferences might be attributed to the fact that these men are relatively more informed about expert opinion in the area of nutrition, as compared to other men. But this factor cannot reasonably be regarded as that which underlies women's food preferences in general. The deviant pattern among well-educated men might therefore equally well be attributed to the fact that they are less likely than other men to maintain a conception of the difference between men and women as being gradient in character. In that event, the need to maintain a correspondingly *fitting* gradient distinction in respect to their food preferences would be less salient for this group of men as compared to other men.

The contribution of blending theory to understanding agency

No attempt has been made here to outline the many factors that exert influence upon food preferences or practices. In the light of case material regarding gendered habits of consumption, it is nevertheless possible to sketch the contribution of blending theory to social theory with particular regard to the character of agency.

On functionalist premises, we would be required to claim that actors discern a given practice as being appropriate or otherwise in so far as they have internalised available norms (i.e. rules of behaviour, expressed in interaction as expectations directed to the incumbent of a given status position). The actor is thus conceived as acting in a voluntary but not a creative manner with respect to given norms (*cf.* Joas, 1996). Norms vary from one society to another. Their specific contents are thought to be arbitrary, while their functions (largely unintended consequences) for the maintenance of a given social structure are not. This view of the relationships between actors, practices and the normative aspects of social structure has been criticized on many counts, of which central criticisms are that it cannot account for processes of social and cultural change, it presupposes cultural integration and cannot account for conflict, and it tends to treat structural factors as causal and cultural phenomena as epiphenomena of social structure.

The former points of criticism have also been levelled at structuralist accounts with the difference that the symbolic structure of cultural phenomena is at issue, while the actor's contribution to the generation or maintenance of such structure remains unexplained. The point that so irritated Mary Douglas was that a focus upon symbolic structure yields such relatively poor insight into the character of agency, it being merely assumed that unconscious mechanisms must render the actor a bearer of such structures.

The ambitions of these older 'grand' theories have been largely abandoned in recent years in favour of 'thick description' of practices, situated analyses of norm negotiation, and a widespread commitment to the view that both social and cultural phenomena are constructed by social actors. These approaches attribute central importance to human agency, and have been fruitfully employed in the analysis of concrete social phenomena. But they do not offer a perspective from which we might begin to explain why men and women in vastly different situations should exhibit similar preferences and practices or negotiate similar norms, much less why they should do so without being able to account for what they are at.

Given the unresolved issues of social theory, the available interpretations and explanations of gendered food practices are less than satisfying. Most of the available accounts are *ad hoc* interpretations of data collected from local populations. Some few theorists have noted the transcultural character of preferences and have put forward an unexamined suggestion to the effect that metaphor is implicated in the relationship between vegetables and femininity on the one hand, and meat and masculinity on the other (Lupton, 1996; Füerst, 1995). The mainstream account, however, rests on the premises of older schools of thought, conceiving preferences and practices as epiphenomena of social structure.

According to that account, symbolic significance is attributed to foods in so far as foods are accorded the same status as their consumers (Barthes, 1975; Bourdieu, 1984; Charles & Kerr, 1988; Pederby, 1995). For this reason, it is claimed, men do not consume the kinds of products preferred by women or children since such practices would undermine the maintenance of their superior status. The observation as such may well be valid as applied to a majority of men, but the supposition that social stratification is the causal factor behind preferences, practices and the attribution of symbolic significance to foods, does not follow from that observation. In accordance with functionalist premises, this account helps us to understand how given patterns of preference are maintained and how a given set of norms can serve to reproduce gendered status positions. It does not help us to understand how any specific set of preferences or norms are generated, nor why they might change. It also fails to account for why men at the top of the social scale are not exemplars of 'masculine' food preferences, but constitute instead a deviant case.

Several dilemmas are resolved by seeking to account for these puzzling data from the vantage point of blending theory. First, if social actors are conceived as cognitively creative human beings who possess the capacity to blend inputs, we are enabled to account for the manner in which gendered preferences, and their tacit meanings, are generated. As such, this does not provide us with an account of the ways in which any particular blend may become institutionalised and thereby subject to normative constraints. But it does imply that the generation and maintenance of any given norms rest upon actors' discernments, the significant point in this context being that such discernments are not undertaken in an arbitrary manner. This in turn yields the possibility of accounting for how and why any given norms might change. Second, it becomes clear that social structure is by no means unrelated to the cognitive accomplishments of social actors. From the actor's perspective, any given aspects of structure (status positions, norms, roles and social institutions) constitute inputs to – rather than causes of – discernments made. Third, while the ability to discern who ranks above and below whom is among the preconditions of maintaining any system of social stratification, this does not render the actor a master builder of that system. We are enabled to pursue constructionist premises without assuming that the contents of a given input or blend in the mind of the actor and the structure of collective actions are isomorphic. By the same token, we are enabled to review the findings of structuralist analyses without positing more in respect of agency than the actor's ability to blend (*cf.* Sweetser, 2000: 319).

Although the actor's involvement in social construction is not undertaken from the perspective of a master builder, it emerges that the minutiae of expectations in everyday life are nonetheless far from being arbitrary. There are indeed reasons why we expect to find male waiters in a restaurant purporting to offer *haute cuisine*, waitresses in a coffee shop, our host carving the joint of meat and serving the drinks, our hostess cutting the cake and pouring tea. We may not be able to say what those reasons are. If asked, we are likely to refer to tradition. Some people treat meat in the manner of vegetables, chopping both into small pieces to make a sauce, others do not, and we may not pause to wonder how often this occurs in egalitarian households as compared to other households. If the genesis of preferences and norms cannot be accounted for, there is no more to be said. But blending theory does offer the conceptual tools whereby the blends that underlie such non-arbitrary patterns can be unpacked and their implicit meanings made explicit.

This view of the matter allows us to analyse food culture on the assumption that any given cuisine constitutes a relatively coherent domain of largely non-discursive practices in which kinds and grades of goods, events, activities and people are mapped on to each other. The present analysis suffers from the limitation that conceptual mappings in the field of food practices have not been included, although they could fruitfully be explored in regard to food taboos as well as a range of other matters. Only two examples of gradient blends have been briefly presented. If, as I have tried to demonstrate, grades of food are grades of events and grades of people, as expressed in our food practices, it may be of benefit to introduce the notion of 'performative metaphor' to our analyses of non-discursive meaning constructions. The term refers to mappings that are expressed by means of what we do, the tacit meaning of which may not be discursively available. Such mappings it must be presumed are expressed in a very wide field of cultural practices from the finer arts to the more mundane matters of everyday life. This perspective opens up a new field of investigation to sociologists. It also suggests the need for blending theorists to give more consideration to the ways in which human beings construct and communicate meanings that are not expressed by means of language.

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Letting Time-Flow Carry One's Body: Blending of Moving-Ego and Moving-Time

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Abstract

The concept of time has been analyzed in the conceptual metaphor theory, in which it is usually divided into sub-metaphors such as the Moving-Time and the Moving-Ego metaphors. In English and in many other languages, time as a moving object and time as moving ego are claimed to have the opposite orientation: the former faces the earlier and future comes from the front of us, while the latter faces the later and ego moves into the future. It has been assumed that when one of them is moving, the other is static. However, we find examples of time metaphors in Japanese where time and ego both move at the same time, and in the same direction. This paper analyzes some of such examples, and suggests that they require a more subtle machinery of analyzing the structure of conceptual integration. We argue (i) that the orientation of time and ego in such examples involves blending of moving-time and moving-ego, and (ii) that they have some emergent conceptual structures that do not appear in neither the source nor the target domains of time metaphor.

1. Introduction

Time metaphors have been extensively studied by researchers of metaphors since the time of Lakoff & Johnson's (1980) well-known work. In the metaphor theory along this line, it is assumed that metaphors are conceptual mappings from structures in one conceptual domain (the source domain) to structures in another domain (the target domain) and that metaphor is the basic mechanism by which we understand abstract concepts in terms of more concrete concepts (Lakoff 1993a: 28). It has been argued that the core structure of the source domain, image schema, (Johnson 1987: 29) is preserved in the target domain (Lakoff 1990: 54, 1993b: 215). Since the introduction of conceptual metaphor theory, there have been salient theoretical evolutions, which includes Grady's (1997) primary metaphor theory, yet the basic idea of conceptual metaphor theory has not changed. Conceptual metaphors are thought to be two-domain uni-directional mappings based on experiential motivations.

Another important view of metaphorical uses of language has been presented by Turner & Fauconnier (1995, 1998), Fauconnier & Turner (1996, 2002), and other works of these authors, namely, the theory of conceptual blending. This theory takes multi-domain view, which does not limit the direction of the interaction of inputs. In conceptual integration, more than two concepts, images, or domains can serve as input spaces at the same time, and they all can contribute to creating a new concept or a blend. The plural inputs have one "generic space" in common, and thus we have "four or more (many) mental spaces rather than two domains", which is called "many-space model" (Turner & Fauconnier 1995: 184). In the blended space, we can find some emergent structures that are not found in any of the inputs.

The above two theories have some important aspects in common. They both pursue our general cognitive ability contributing to our concepts and understanding. However, they have crucial differences as well. The most salient difference seems to be that conceptual metaphor theory tries to explain uni-directionality found in metaphorical expressions in language, which conceptual blending theory does not. Conceptual blending theory gives theoretical explanation to emergent structures in the blend, while conceptual metaphor theory does not deal with them.

In this paper, we will examine some examples from Japanese time metaphors including complex implications and emergent structures, which might fit analysis by conceptual blending theory. Note that, however, it is not our concern to decide which of the two theories is the better one or which theory can be eliminated.

2. Previous Studies

In this section, we will overview previous analyses of time metaphors.

2.1. Basic Structures of the TIME IS MOTION metaphor

Researchers of metaphor have pointed out that there are many different kinds of time metaphors: we have TIME IS MOTION, TIME IS RESOURCE, TIME IS LIQUID, TIME IS A THIEF, TIME IS A NURSE, and so forth (Lakoff & Johnson 1980, Lakoff 1993b, Shinohara 1997, etc.). Among these time metaphors, TIME IS MOTION (metaphorical mapping from spatial motion to elapse of time) has attracted researchers' special interest, maybe because this metaphor seems to be universal and fundamental to human thought, and because it reveals the close-knit relationship between our conceptual structure and our cognitive system.

The following are some examples of TIME IS MOTION in English and Japanese (b-examples are counterparts in Japanese).

(1) a. The time will come when you will realize everything.
b. anata-ga subete-o satoru toki-ga kuru daroo.
you-Nom. all-Acc. realize time-Nom. come will

(2) a. Christmas is approaching.
b. kurisumasu-ga tikazuite iru.
Christmas-Nom. approach be

(3) a. Time passed by.
b. toki-ga sugi-ta.
time-Nom. pass-Past

The above examples include verbs of motion ('come' (*kuru*), 'approach' (*tikazuku*), and 'pass' (*sugiru*), which express the passing of time metaphorically. Each verb literally expresses spatial motion from one place to another via some path. The fact that these verbs of motion can express the concept of passing of time indicates that the concept of time is metaphorically structured in terms of the concept of spatial motion.

In TIME IS MOTION, what is mapped between the two domains is "the path schema" (Johnson 1987: 114), which is one of the most fundamental and important image schemata. The path schema emerges from our recurring physical experience such as moving from one place to another, or looking at objects moving from one place to another. It consists of three elements: a source, a goal, and a sequence of contiguous locations connecting the source and the goal. The path schema is preserved when the source domain structure is mapped onto the target domain structure.

One of the salient characteristics of the TIME IS MOTION metaphor in relation to the path schema is the employment of the front/back axis as the source structure. We have three basic spatial axes, the front/back, the right/left, and the up/down axes, among which the front/back axis is used most frequently and pervasively in the TIME IS MOTION metaphor. The other two axes are obviously restricted in use (Clark 1973, Traugott 1975, Lakoff & Johnson 1980, Lakoff 1993b, Haspelmath 1997, Seto 1995, Shinohara 1997, 2000a, 2000b, Moore 2000a, b, etc.).

2.2. Front / Back Orientation

In English, the spatial concepts "front" and "back" are mapped onto the temporal concepts "future" and "past" in the following way (Lakoff & Johnson 1999: 152).

> **TIME ORIENTATION:**
> What we will encounter in the future is ahead of us.
> What we are encountering at present is where we are (present to us).
> What we encountered in the past is behind us.
> **MOVING TIME:**
> What we will encounter in the future is moving toward us.
> What we are encountering now is moving by (passing) us.
> What we encountered in the past has moved past us.
> **MOVING OBSERVER:**
> What we will encounter in the future is what we are moving towards.
> What we are encountering now is what we are moving by.
> What we encountered in the past is what we moved past.

Though some researchers suggest that there might be languages where future comes from behind or past lies in front of ego (Alverson 1994: 104, Dahl 1995: 199, Hill 1978: 528ff, Lakoff & Johnson 1999: 141, etc.), the FUTURE IS FRONT / PAST IS BACK orientation is the basic in at least English and Japanese (Lakoff & Johnson 1999: 152, Yamanashi1995: 114-115, Shinohara 1999: 115-126).

Besides the orientation of future and past, Moore (2000a, b) argues that it is important to distinguish deictic time and non-deictic time. He analyzes linguistic realization of the moving time metaphor including non-deictic cases and presents a prediction about cross-linguistic tendency as follows (Moore 2000b: 89).

> a. If a FRONT or BACK expression-type means 'earlier than' or 'later than' and is neutral vis à vis deictic anchoring, FRONT will correspond to 'earlier than' and BACK will correspond to 'later than'.
>
> b. A corollary to tendency (a), assuming that the future is metaphorically in front of Ego and the past is behind her, is that if a FRONT expression means 'later than' or a BACK expression means 'earlier than', it will be deictically anchored.
>
> c. Where there is an expression in a language that contradicts tendency (a), the more common, less marked, way of saying 'earlier than' or 'later than' in that language will conform to tendency (a).

This generalization seems to work for languages including English and Japanese (Shinohara in print).

2.3. Other Important Assumptions

Lakoff & Johnson (1980: 43) distinguish two sub-metaphors within TIME IS MOTION, that is, TIME IS A MOVING OBJECT and TIME IS STATIONARY AND WE MOVE THROUGH IT. It is assumed here that when time is seen as motion, either of time or ego is conceptualized as moving and the other as static. It has not been suggested that there is a moving time metaphor in which both time and ego are conceptualized as moving, resulting in something like TIME IS A MOVING OBJECT AND

WE MOVE THROUGH IT. This limitation is usually attributed to the cognitive figure / ground segregation. When time is conceptualized from the viewpoint that regards time as more salient than the observer, time is seen as "moving" in relation to the static observer. When, in contrast, time is conceptualized from the viewpoint that regards the observer as the more salient, time is seen as "static" in relation to the moving observer. Because figure / ground segregation is fundamental in human cognition, it has been thought to be natural that it also works in time metaphors.

2.4. Summary

Among the structures of TIME IS MOTION that the previous studies have revealed, relevant to the present study are the following points.

(a) The observer and the future face each other, or move in the opposite direction.

(b) Earlier time is situated in front of later time when deictically neutral.

(c) Future lies in front of the observer and past lies behind the observer when the observer of time moves through time.

(d) When time is seen as motion, either time or ego is conceptualized as moving and the other is conceptualized as static.

These generalizations work as long as the basic and conventionalized TIME IS MOTION metaphor is concerned. Expressions of time as motion, however, are not limited to the ones that conform to them. In the following section, some Japanese examples will be shown, where some of the above generalizations do not seem to work.

3. Examples from Japanese Time Metaphors

There are some examples in Japanese time metaphors whose implications cannot be predicted by the generalizations presented in the previous section. These examples imply that time and ego move at the same time, in the same direction. They do not face each other but both look forward. Furthermore, in some examples, time can move and be static at the same time. It contradicts our everyday inference.

These implications cannot be derived from the basic inference structure of TIME IS MOTION discussed in the previous section. It is thus necessary to attribute them to something else. We propose that these implications have arisen from conceptual blending, which allows emergent structures to be created in the blend.

Consider examples (4) and (5).

(4) toki-no nagare-ni mi-o makaseru.
time-Gen. flow-Loc. body-Acc. leave
"to let time-flow carry one's body"

(5) jiryuu-ni oituk-e-nai
time.tide-Loc. catch.up-can-not
"I can't catch up with the time." (I am out of the swim.)

Example (4) means that ego gives her body to the flow of time and allows it to carry her body. It naturally implies that both the flow of time and ego's body will be in motion when the flow of time carries her body. It is also implied that the flow of time and the body of ego will move in the same direction because the flow of time carries the body. Here the flow of time is considered to be the force that propels the body of ego and causes it to move. The verb *makaseru* (to give, surrender, or abandon oneself to something) implies that ego stops trying to move by herself but accept the motion that the force causes.

Example (5) has more intricate structure. Again, it implies that the flow of time (tide) and ego are moving in the same direction at the same time, but there is something more. Unlike example (4), ego in example (5) is not at the same position as the time flow, but is running behind it. Ego tries to catch up with the time flow but she cannot, which means that the point on the time flow being talked about is ahead of ego and there is some distance between them. Interestingly, the point of time being talked about and the position of ego are both considered as "now". It involves two distinct points of time that are both regarded as the present.

Now consider example (6).

(6) toki-wa kawa, kinoo-wa kisibe.
time-Nom. river yesterday-Nom. bank
"Time is a river; yesterday is the bank."

This expression is taken from a Japanese popular song ("Mizu-no kage" (The reflected image on the water) by Yumi Matsutoya). In this example, time is more explicitly expressed as a river, while (4) evokes the image of a river more implicitly. (Note that in Japan the image of a river projected to time is a traditional one and we can find such expressions in literature that goes back to 13th century or even older times, though of course the Japanese language in those days differ from Modern Japanese.)

Examples (4) to (6) thus evoke some interesting implications that deserve close attention. We will analyze them later, but before going on to analysis, we will look at the linguistic context of (6), which provides rich sources of inference.

The whole lyric goes as follows.

(7)
tatoe ikoku-no siroi machi demo,
if foreign.country-Gen. white town even
"Even if (I'm in) a white town in a foreign country,"

kaze-ga nodokana tonari machi demo,
wind-Nom. calm neighbor town even
"even if (I'm in) a neighboring town where the wind is calm,"

watasi-wa tabun onaji tabibito,
I-Top. maybe same traveler
"maybe I am the same traveler,"

tooi imaaju minamo-ni otosu.
distant image water.surface-Loc. drop
"(and) drop a distant image on the surface of water."

> toki-wa kawa, kinoo-wa kisibe.
> time-Top. river yesterday-Top. bank
> "Time is a river, yesterday is the bank."
>
> hito-wa mina gondora-ni nori,
> person-Top. all gondola-Loc. embark
> "Everyone embarks on the gondola,"
>
> ituka hanare-te, omoide-ni te-o furu no.
> sometime leave-and memory-Dat. hand-Acc. wave Part.
> "leave the place sometime, and wave the hand at memories."

The expression *toki-wa kawa, kinoo-wa kisibe* (Time is a river, yesterday is the bank) in the above lyric is not the same kind of metaphor as TIME IS MOTION because it does not directly express the concept of spatial motion. Yet the word *kawa* (river) evokes the concept of spatial motion. This is confirmed by the phrase that means "leave the place sometime, and wave the hand at memories). Time described as a river is not motion itself, but our knowledge that a river flows makes us interpret it "time flows." However, this inference is insufficient, because if we replace the phrase *toki-wa kawa* (time is a river) with *toki-wa nagareru* (time flows), then we cannot fully integrate the next phrase *kinoo-wa kisibe* (yesterday is the bank) and other parts of the song. The concrete images surrounding the image of a river, such as water, the bank, gondolas coming and going, people on them looking around to see the sights, etc., renders it possible for us to understand the whole song. The mere mapping of the path schema from the concept of spatial motion to time cannot explain this rich interplay of images. Further, the knowledge about "gondolas" confirms the understanding of the part *ituka hanare-te* (leave the place sometime), which is made sense of by imagining people on the gondola, being carried away from the bank where they were standing before getting on it. This reminds us of the image that the flow of time is irresistible, that once we get on the gondola, we cannot help but stay on it as we are carried away from the bank. We also understand that the spot where we were standing before getting on the gondola is "yesterday" and we look back at them and realize that we must leave them, saying good-bye to yesterday, that is, "waving the hand at our memories."

Example (7) gives us another important suggestion: time can be conceptualized as moving and being static at the same time. As we saw in the previous section, the two sub-metaphors of TIME IS MOTION is said to be a manifestation of our fundamental cognitive structure, figure / ground segregation. When we see something in this cognitive frame, we cannot see it as both the figure and the ground at the same time. It follows from this that we cannot conceptualize time as both "moving" and "not moving" at the same time. However, the lyric (7) includes both moving time and static time at the same time. Time is moving because it leaves the bank (yesterday), and time is static because yesterday, a time segment, is static since it is said to be the bank that stays behind.

The lyric (7) also implies that ego and time are moving at the same time in the same direction. Ego is moving forward with the gondola, because time is carrying the gondola forward. Therefore the direction of the motion of ego and time is the same, and they are going forward at the same time. Thus, we find here a case that contradicts the generalizations about TIME IS MOTION mentioned in the previous section.

So far, we have examined three examples of Japanese time metaphor that cannot be totally explained by the former generalizations about TIME IS MOTION. In the next section, we will analyze them in more detail.

4. Structures of the Blends

The Japanese expressions discussed in the previous section seem to fit examples of what Coulson (2001: 168) calls two-sided networks. This type of mapping projects frame-level information from both input domains into the blended space, and as a result, the blend involves hybrid models that could not obtain in either domain.

Example (4), *toki-no nagare-ni mi-o makaseru* (to let time-flow carry one's body), can be analyzed as having two input spaces: one is "flow of water", and the other is "elapse of time". The two input spaces share a generic space, which consists of motion and the path schema. In the blend, the concepts "water-flow" and "elapse of time" are integrated. The correspondence of these spaces and elements are shown in Table 1.

Table 1: ***toki-no nagare-ni mi-o makaseru.***

Input 1	**Input 2**	**Blend**	**Generic**
flow of water	elapse of time	time-flow	motion, path schema
Elements	**Elements**	**Elements**	**Elements**
the present position of ego/water	ego's now	ego's now	position
space ahead	future	future=ahead	direction
flow of water	elapse of time	flowing time	motion
force of flow and buoyancy	inevitability of elapse of time	inevitability of being carried by time-flow into future	propelling force

As shown in Table 1, forward motion of water corresponds to coming to a future time, and this direction of motion is the same for ego. As water flows, ego's body is carried forward, and time elapses. Thus both ego and time are in forward motion. It is also seen that the force of river-water that carries one's body forward is integrated with inevitability of going into future, which people should experience no matter how they may resist it. *Mi-o makaseru* (surrender oneself to something) implies that ego exerts no force to cause motion but it is time-flow that causes ego's motion.

Example (5), *jiryuu-ni oituk-e-nai* (I can't catch up with time) is analyzed in Table 2.

Table 2: ***jiryuu-ni oituk-e-nai.***

Input 1	**Input 2**	**Input 3**	**Blend**	**Generic**
tide	time	catching up	catching up times	motion, path schema
Elements	**Elements**	**Elements**	**Elements**	**Elements**
flow	elapse	running ahead	time running ahead	motion
space ahead	future	future	future = ahead	direction
tide's position	a future point of time	the target of chasing	target = a future point of time in the time-flow	position
ego's position	ego's now	the present position	ego's present position in the time-flow	position
distance between tide's position and ego's position	discrepancy between time's position and ego's position	an attempt to reduce the discrepancy	an attempt to reduce the discrepancy between ego's present situation and actual situation	distance

Again the direction of motion of time and ego is the same, i.e., forward into the future. They are also moving at the same time.

Noteworthy here is that the two positions that do not coincide are both conceptualized as "the present". One is the present position of tide; the other is that of ego. Both are "the present" but they are different positions. This suggests that, in this expression, the positions in time-flow are not exactly points of time, but they represent something else. It can be suggested that each position along the time-line represents what we see at the point of time in, for example, surrounding social and cultural situations. We use the phrase "we cannot catch up with time-flow" when we feel that society has more advanced than we can easily adapt ourselves to it.

Catching up with something presupposes running after it, and running after time means trying to adapt oneself to social changes.

Example (6), *toki-sa kawa, kinoo-wa kisibe* (Time is a river, yesterday is the bank), with its context shown in (7), has still more interesting implications. See Table 3.

Table 3: *toki-wa kawa, kinoo-wa kisibe.*

Input 1	**Input 2**	**Blend**	**Generic**
river	time	time=river	motion, path schema
Elements	**Elements**	**Elements**	**Elements**
water-flow	elapse of time	time-flow	motion
space ahead	future	future = ahead	direction
ego's position = gondola	ego's now	ego's now in the time-flow	position
bank	yesterday	static landscape along the time-line	position

As shown by the linguistic context (7), it is implied that the direction of time and ego is the same and they are moving at the same time. The relationship between ego's now and yesterday is conceptualized in terms of the relationship between the river-flow and the bank, which involves the dynamic flow and the static landscape at the same time. Both the river-flow and the bank in this example are elements of time, therefore time is conceptualized here as both dynamic and static at the same time.

As in example (5), the force of the river represents irresistibility of the elapse of time or the power of time that carries us away from the past into the future. (5) and (7) differ in that (7) uses the image of gondola instead of just surrendering oneself to the flow of the river. In either case, the integrated images are so rich that mere mapping of the path schema from the source domain onto the target domain cannot satisfactorily explain these examples.

5. Emergent Structures

Emergent structures are important properties of blend (Fauconnier & Turner 2002: 42ff). By blending, relations that are not found in the inputs are created and they usually projected back to counterparts in the input spaces.

One of the emergent structures we find in (4) – (7) is their orientation of motion. Unlike the common TIME IS MOTION metaphor, time and ego in these blends move in the same direction at the same time. There is no figure/ground segregation between time and observer. This suggests that moving time and moving-ego are integrated in these blends. This integration is not found in either of the inputs, but only found in the blend.

Furthermore, in example (7), time is split into two parts, one of which moves and the other keeps static. Time-flow conceptualized as a river and the row of points of time conceptualized as the bank both constitute some aspects of time. It is only in the blend that time is conceptualized in this way.

Since these emergent structures are not predicted by the projection of the path schema from the domain of space to that of time, the theory of blending is required in order to explain the structure of these examples. This does not mean, however, that we should do away with the two-domain, unidirectional theory of conceptual metaphor, but we find here that the theory of blending can explain some peculiar examples of metaphorical expressions that cannot be fully explained in terms of cross-domain image-schematic mappings.

6. Conclusion

In this paper, we analyzed some examples of time metaphors in Japanese and showed that we need blending to fully explain their structures. We argued that the orientation of time and ego in such examples involves blending of moving-time and moving-ego, and that they have some emergent structures that do not appear in neither the source nor the target domains of the common TIME IS MOTION metaphor. We do not claim that the blending theory can eliminate the conceptual metaphor theory, but we have shown where the blending theory is required.

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From x to y: the 'complete path' construction in Basque

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Abstract

In Basque, there is recurrent tendency to express both the source and goal of movement for the description of translational motion even in cases where one of these elements is pleonastic. This construction called 'Complete Path' (Ibarretxe-Antuñano 2002) shows up not only in physical description of motion but also in a good number of different metaphorical and idiomatic expressions. At first sight, these metaphorical expressions do not seem to follow any clear pattern: some expressions express 'quickness', some others 'period of time', and some others 'manner'. In this paper, we argue against this position. We propose that all these expressions form a coherent, structured, and motivated group. We will base this claim on the following theoretical assumptions: (i) the 'Complete path' is a 'construction' in terms of Goldberg's (1995) and Fillmore and Kay's (1995) construction grammar; (ii) these meanings are the result of what Fauconnier and Turner (1998, 2002) called conceptual integration. The physical experience of a translational motion from one place to another is blended with whatever the semantic content of the landmark denotes.

1. The 'Complete Path' Construction in Basque.

Basque, a language isolate spoken on both sides of the western Pyrenees, has rich lexical resources for the expression of space and motion. Five locational cases – locative *–n*, the ablative *–tik*, the allative *–(r)a(t)*, the goal allative *–(r)aino*, and the directional allative *–(r)antz-* and over thirty locational postpositions, mostly spatial nouns which can take any of the locational case-suffixes.[1]

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[1] See Aurnague (2001), Hualde and Ortiz de Urbina (in press), and Ibarretxe-Antuñano (2001) for more information on Basque locational cases and postpositions.

In terms of Talmy's (1991, 2000) motion event typology, Basque has been classified as a verb-framed language (Ibarretxe-Antuñano, 2002, submitted).[2] That is, a language whose characteristic expression of motion conflates motion and path in the verb and expresses manner of motion in a separate element.

However, it has been pointed out that Basque is not a typical example of this category with respect to the description of path. Contrary to the characterisation of a prototypical verb-framed language like Spanish, Basque tends to provide an extensive and detailed elaboration of path. Just to illustrate this point, let us take some figures from the analysis of motion events in the Frog Stories (Slobin and Berman 1994).

In the description of some of the scenes in these stories, the falling scenes, Slobin (1996) reports that Spanish, a verb-framed language, uses bare verbs[3] around a 37%, and verbs with some description about the ground[4] around a 63%. English, a satellite-framed language on the other hand, shows an 18% for bare verbs and an 82% for verbs plus ground. According to Ibarretxe-Antuñano (2002), the use of bare verbs in Basque is only an 11%, and the use of ground descriptions is an 88%. These figures are much closer to English than they are to Spanish.

This detailed and pervasive elaboration of path is not uniquely manifested in this type of examples. Ibarretxe-Antuñano (2002, submitted) also points out another case, very frequent in both oral and written narratives, that this author names the 'Complete Path construction' (CP henceforth). It refers to a recurrent tendency to overtly express both the source and the goal of movement for the description of translative motion in

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[2] More details about typology.

[3] 'Bare verbs' are those cases when there is "no elaboration of path beyond the inherent directionality of the verb itself" (Slobin 1996b: 200).

[4] This includes the source, goal, path, and medium.

Basque, even in cases where one of these elements is pleonastic. Let us illustrate it with some of her examples.

(1) *Bapatean Txuri txakurra* ***lehiotik behera*** *joan zan*
suddenly txuri dog:ABS window:ABL below:ALL go:PE aux
'Suddenly, Txuri the dog went down from the window'

(2) *Goio* ***arroka artetik behera*** *jaitsi zen*
goio rock between:ABL below:ALL descend:PE aux
'Goio went down from the rocks'

Semantically, both examples describe the path followed by a dog in (1) and the character Goio in (2). These sentences specify both the source of motion –*lehio* 'window' and *arroka* 'rock'-, and the goal of motion –*behe* 'below'-.

Syntactically, they have the same structure: the goal of motion takes the ablative case –*tik* and the goal of motion, the allative –*ra*, and there is no other element between the ablative and the allative. However, they are not exactly the same. If we look closely at the lexical items that fill in these roles, we notice that they are different. Whereas the first element, the source, is a noun, the second element is a locative postposition. That is to say, the second element is much more general in meaning than the first one. What is more, in (2), the second element is somehow 'redundant', because the semantic information provided in *behera* 'below:ALL' is already conveyed by the verb *jaitsi* 'descend'. That is to say, it would have been enough to say *arroka artetik jaitsi* (rock between:ABL descend:PE) 'go down the rocks' in order for the sentence to be perfectly okay not only grammatically but also semantically.

This type of construction is not compulsory in Basque; there is no grammatical rule that says that both the source and goal of a translative motion should be mentioned at the same time at all times. Sometimes speakers choose to use them in certain situations, sometimes they do not. Ibarretxe-Antuñano (submitted) proposes that

> [It] is used in those cases when the path is 'delimited', i.e. the location of both source and goal is conceptualised as a fixed point in space, and as a result the distance between them (path) is viewed as a restricted, delimited trajectory between these two fixed points. The focus of a CP construction, however, is not on either the source or the goal, but on the path delimited by them, the full trajectory defined by these two points.

In other words, in this type of construction neither the ablative nor the allative are understood as independent landmarks, one playing the role of the source, and the other that of the goal. Both ablative and allative form a conceptual gestalt together with the path formed between them and the motion needed to go from one to the other. Therefore, when the speaker chooses to use this construction, what he describes is not only a motion from one place to another, but also this gestalt unit, the 'delimited path' between these two landmarks. As we will discuss in the reminding of this paper, this gestalt carries a very specific meaning that is present in all non-physical motion usages of this construction.

It is in this sense that this type of structure can be understood as a *construction* in terms of Fillmore and Kay's (1995) and Goldberg's (1995) Construction Grammar. According to this theoretical framework, constructions are basic units of language that carry meaning independently of the words in the sentence.

For a construction to be considered as 'distinct' in the grammar, it is necessary to show that its meaning and/or form is not predictable or compositionally derived from the knowledge of other constructions in the language. As Goldberg (1995: 4) puts it:

> C is a CONSTRUCTION iff$_{def}$ C is a form-meaning pair <F$_i$, S$_i$> such that some aspect of F$_i$ or some aspect of S$_i$ is not strictly predictable from C's component or from other previously established constructions

In the case of the CP construction, we argue that this construction itself carries the meaning of 'motion on a delimited path (the distance between source and goal) with no other intermediate landmarks', and secondly, that this meaning is not compositionally derived from other constructions. That is, the different elements that take part in this construction, namely, source, goal, path, and motion, are not compositionally but gestaltically understood.[5] Support for these two claims will be provided in this paper.

2. Non-physical motion usages of the 'Complete Path' construction.

In the previous section we have introduced the notion of CP construction and illustrated it with a couple of sentences. In these examples, the CP construction was used to describe physical motion. Although this will most probably be the prototypical usage of this construction, it is by no means the only one. Let us have a look at the following cases.

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[5] Due to space constraints, we have only focused on certain, mainly semantic, arguments that prove that a construction is a *construction*. Although we do not talk about other arguments such as productivity or construction structure (syntax, elements, order…), these are also followed by our CP construction. Many of the examples that we will discuss later one are productive, that is to say, they follow the same pattern and we only need to change the nouns that fill in the roles of source and goal. With respect to the structure, the CP construction is a unit and as such, it does not allow either an insertion of any other element or a change of order in any of the elements. This is a useful means to test whether a sentence that contains an ablative and an allative is really a CP construction or a sentence with a source and goal.

(3) *Belaunetik belaunera*
generation.ABL generation.ALL
'from generation to generation'

(4) *Ahotik eskura*
mouth.ABL hand.ALL
'suddenly'

(5) *Argitik ilunera*
light.ABL dark.ALL
'all day'

(7) Hitzetik hortzera
word.ABL tooth.ALL
'suddently'

(6) *Okerretik okerrera*
wrong.ABL wrong.ALL
'worse and worse'

(8) *Gezurretik gezurrera*
lie.ABL lie.ALL
'always lying'

CP construction is used in all these examples. However, it does not longer have a physical meaning as in (1) and (2), but a wide range of meanings. In (3) and (5), their meaning refers to a kind of cycle, 'from generation to generation' and 'from day to night', respectively. In (4) and (7), their meaning is related to 'quickness', 'suddenness'. Finally, in (6) and (8), their meaning is the result of an intensification of the noun used in the construction itself, 'worse and worse' and 'always lying', respectively.

If all of these examples share the same construction, and therefore, -if we agree with the Construction Grammar viewpoint- a specific meaning, a question that immediately comes to our mind is the following: how can we explain this semantic diversity?

A possible factor that can help us to answer this question may be found in the lexical semantics of the nouns used in these examples. That is to say, the meaning of the noun influences the interpretation of the sentence in which it is used. This might be a possible explanation for examples (3), (5), (6), and (8), where the semantic content of these nouns is directly reflected in these examples.[6] It is clear that the fact that we use the noun *belaun* 'generation' in (3) or *gezur* 'lie' in (8) allows us to see the connection between the semantics of these nouns and the final interpretation when they are used in the CP construction.

However, this type of argument posits two problems. Firstly, the semantics of the noun in each of these examples may direct us towards one specific interpretation, but it does not explain why (3) refers to a kind of 'cycle' on the one hand, and (8) to a kind of 'intensification' on the other. Secondly, it does seem to explain examples (4) and (7). In order to understand these two examples, we need to look a little bit further than the lexical semantics of these words *per se*, because their lexical meanings *aho* 'mouth', *esku* 'hand', *hitz* 'word', and *hortz* 'tooth' do not give us any clues as to why they come mean 'suddenly'.

Another possible factor could be the reduplication of the same lexeme in some examples such as (6) and (8). Reduplication is a common linguistic means used in different languages to express 'intensification'. If we say, for example, *the cake is very, very good*, the reduplication of the adverb *very* let us know that the cake is not just good, but excellent. Therefore, the reduplication of the noun *oker* 'wrong' in (6) and *gezur* 'lie' in (8) might be a plausible explanation for the meaning of these two examples.

However, as it happens with the previous argument, this explanation is not problem free. Reduplication might shed some light on why these two examples have this connotation of 'intensification', but 'intensification' of the semantics of the noun is not all what these expressions mean. In these sentences, there is a sense that these two nouns refer to a different entity or to a different realisation of the same entity. That is to say, that the first *oker* in (6) and the first *gezur* in (7) have the same meaning, 'wrong' and 'lie', as the second *oker* and *gezur*, but they do not refer to the same 'wrong' and the same 'lie'.

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[6] Example (5) is perhaps a little bit more complicated since we are using 'light' and 'dark' to metonymically refer to 'day' and 'night' respectively.

This becomes very evident in an example like (3). In this case, the noun is also repeated, but the reduplication of the noun *belaun* 'generation' does not result into an 'intensification' of the lexical content of this noun at all. In this example, it is very clear that the first *belaun* is different from the second *belaun*, and that is why, this expression is equivalent to say *from father to son*, where both nouns denote different entities. We will explain this issue in terms of 'role values' in the following section.

In sum, if we want to really understand the CP construction, we will need to propose a typology that takes into account not only its different meanings, but also the characteristics of the lexemes that play the role of source and goal, namely, their semantics and whether they are the same or different.

Before we start with our first attempt to create a typology, we will very briefly say a couple of things about the data that we will be using in this study. The use of the CP construction comprises a wide rage of cases as we have just seen, but in addition to its semantic complexity, there are other factors to take into account such as the lexemes themselves and the degree of idiomaticity, as well as that of productivity, of these expressions.[7]

In order to create a reliable corpus to work with, we have made use of three different sources: Izagirre (1981), Mokoroa (1990), and Zamarripa (1987). These are compilations of Basque idioms and common, everyday expressions. We had a total of 1440 different tokens. Since this is only our first attempt to classify these expressions, we have eliminated from our data those cases which contain either a demonstrative –*handik aurrera* (there.ABL front.ALL) 'from there onwards'- or a postposition –*sei urtetik gora* (six year.ABL above.ALL) 'more than six years' or an indefinite quantifier *batetik bestera* (one.ABL other.ALL) 'from one another'. These expressions are as valid as the ones that we have used in this paper; we have excluded them just to simplify our classification process. Thus, a final working corpus contains 484 tokens.

3. Towards a typology of non-physical motion usages.

In the previous section, we have seen that the explanation and classification of the non-physical motion usages of the CP construction is not an easy task. The main problem that we encountered was twofold: On the one hand, we needed to take into account different factors: the meaning brought in by CP construction, the lexical meaning of the nouns, the reduplication of the nouns… And on the other hand, these factors accounted for different aspects of these expressions, but none of them was able to give a full explanation for all of them.

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[7] Productive usage such as (3) or (6) versus a more idiomatic expression such as (7).

In this section, we propose a typology based on a relationship of similarity or dissimilarity between the lexical items that play the role of source and goal in the CP construction. These two concepts, similarity and dissimilarity, are understood on the basis of the metaphor: SIMILARITY IS SHORT DISTANCE (and its contrary, DISSIMILARITY IS LONG DISTANCE). That is to say, two elements are considered to be similar if they are located physically close.[8] Let us illustrate this with an example: the distance between different parts of the human body. In our corpus there are several expressions that take parts of the human body as source and goal. However, we have to bear in mind three different points:

(i) not all body parts are relevant for this construction; i.e. there do not seem to be internal body parts such as the lungs or the guts. In fact, our data only show a limited group of 20 different body parts: *aho* 'mouth', *begi* 'eye', *behatz* 'toe', *bekoki* 'forehead', *belarri* 'ear', *buru* 'head', esku 'hand', *eztarri* 'throat', *golko* 'bosom', *magal* 'lap', *hanka* 'leg', *hortz* 'tooth', *kokots* 'chin', *mihi* 'tongue', *mingain* 'tongue', *oin* 'foot', *orpo* 'heel', *papar* 'chin', *sudur* 'nose', *ukabil* 'fist';

(ii) the choice of what body parts are put together in the construction is restricted; that is to say, we find pairs such as *ahotik sudurrera* 'from mouth to nose', or *burutik oinetara* 'from head to feet', but there are no pairs such as *ahotik oinetara* 'from mouth to feet' or *burutik sudurrera* 'from head to nose'. We hypothesise that this restriction is based on whether these entities are considered to be conceptually linked or not.

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[8] This metaphor is widely used in cases such as *their positions are coming closer and closer, my views are quite far away from yours…*

(iii) the distance between these body parts is not always considered equally the same. In the previous examples, the distance between the mouth and the nose on the one hand, and the head and the feet on the other are thought as different: the former shorter than the latter. Consequently, their meaning is not the same despite the fact that both share the CP construction and body parts as source and goal. However, whereas *ahotik sudurrera* means 'quickly', *burutik oinetara* means 'completely'.

These three points are not only applicable to the body parts examples but to all of the examples that make use of this construction. Based on this conceptual distance relationship, we argue that there are two main groups for this construction:

> *Group 1*: The source and the goal are understood as conceptually similar. That is, the distance between source and goal is considered short. For example, *ahotik sudurrera* (from mouth to nose) 'quickly', *ahotik eskura* (from mouth to hand) 'quickly'.
>
> *Group 2*: The source and the goal are understood as conceptually different. That is, the distance between source and goal is considered long. For example, *burutik oinetara*

(from head to feet) 'completely', *argitik ilunera* (from light to dark) 'all day'.

We also propose that each of these groups is further subdivided into two classes depending on the repetition of the lexical items that play the roles of source and target.

As we discussed in the previous section, although the repetition of the lexical item is an important and necessary feature, it is not enough for building a typology on it. This is so because expressions with and without the same lexical item can convey the same meaning as in (5), reproduced here as (9), and (10).

(9) *Argitik ilunera*
light.ABL dark.ALL
'all day'

(10) *Argitik argira*
light.ABL light.ALL
'all day'

The meaning of both expressions in (9) and (10) is the same, i.e. 'all day', the lexical items, however, are not. In (9), we have two different ones – *argi* 'light' and *ilun* 'dark'-; in (10), on the other hand, we have a repetition of *argi* 'light'.

According to our typology, both expressions would belong to Group B: source and goal are understood as conceptually different. The reason why we include them in this group can be easily seen in the case of (9) since both items are different, but this is not so straightforward in (10). In the latter, both lexical items are the same, and therefore, we cannot decide at first sight whether the distance between the two lexical items is long or short, whether they are conceptually different or similar. In order to do so, we need to discover what the relationship between these two items might be.

Our hypothesis is that they are not co-referential. We argue that the lexical items that play the role of source and goal have the same meaning, but they do not refer to the same entity. In terms of Fauconnier's (1985, 1994) Mental Spaces theory, we could say that they describe different values for the same role. As this author argues, the identification between trigger and target, between source and target is a variable property:

> The fact that a linguistic description may identify a role or its value may itself be considered a case of transferred trigger reference, since the link between a role and its value for some setting of parameters is itself a pragmatic function. (Fauconnier 1994: 42).

Therefore, in (10) the first *argi* refers to day 1 and the second *argi* to day 2. This explanation applies to other examples such as *belaunetik belaunera* 'from generation to generation' in (3), *gezurretik gezurerra* 'from lie to lie' in (8), *okerretik okerrera* 'from wrong to wrong' in (6), or in *menditik mendira* 'from mountain to mountain'. In each of these examples the first element is different from the second one.

Although these expressions behave similarly with respect to their referential values, they are not exactly the same. In Section 2, we said that expressions such *gezurretik gezurrera* 'always lying' or *okerretik okerrera* 'worse and worse' had a sense of 'intensification' that expressions such as *belaunetik belaunera* 'from generation to generation' lack. Although we need further research into this issue, our explanation is the following: whereas the source and the goal in *belaunetik belaunera* are understood as two distant entities, the source and the goal in *gezurretik gezurrera* and *okerretik okerrera* are understood as two entities close to each other. In plain words, if we use this expression in reference to a person what we imply is that s/he says so many lies all the time that we have lost track of them. This does not mean that there is a co-referenciality between the first lie and the second lie, as we have argued before, they refer to different lies. It is only that the distance between source and target is minimised or even blurred.

In sum, our typology is based on two main parameters: (i) the conceptual distance between source and goal, and (ii) the repetition of the lexical items in the roles of source and goal. In total we will have four groups: Group A –different item (*ahotik eskura*), Group A –same item (*gezurretik gezurrera*), Group B –different item (*argitik ilunera*), and Group B –same item (*belaunetik belaunera*).

Before we finish this section, we would like to point out another issue that deserves a much deeper analysis than we can afford in this paper: the pragmatic function of contextual and cultural information, and its role in the typology that we have proposed. Let us have a look at the following examples.

(11a) *Inurria bezala* ***goizetik gauera*** *ari arren, doi-doian bizitzeko lain egin ezkero pozik gu!* (Mokoroa 89033)
ant.ABS as morning.ABL night.ALL work although hardly live.PUR enough make if happy we.ABS
'Although we are working as hard as a mule ***goizetik gauera***, we are happy provided that we have enough to live!'

(11b) *Ameriketan izana zen, uri askotan pilotari egona; eta* ***goizetik gauera*** *ez dakit nola dirutua* (Mokoroa 12016)
america.LOC be.ABS aux, city many.LOC pelota player be.ABS and morning.ABL night.ALL neg know.1SG how become-rich.part.ABS
'He had been in America, he had been a pelota player in many cities, and ***goizetik gauera*** I don't know how he become that rich'

Both cases contain the expression *goizetik gauera* 'from morning to night', but each one uses it differently. In (11a), *goizetik gauera* refers to a span of time, a cycle that goes from morning to night. The distance between source and target is long, and therefore, we need some time to go from one to the other. The path is interpreted as the sum of the tokens or values of the span of time compressed by the source and target. In (11b), *goizetik gauera* refers to a span of time just too short to become rich. The distance between source and target is short. In (11b) the values are taken 'metaphorically' to mean 'very quickly'.

In sum, *goizetik gauera* in (11a) would be included in Group B – different item, and *goizetik gauera* in (11b) in Group A –different item. But what determines this classification of (11a) and (11b)? A possible explanation could be found in the pragmatic function that the contextual information in each example offers us. In other words, the contextual information surrounding the expression *goizetik gauera* triggers or determines the interpretation of such an expression 'all day' (conceptually distant) or 'quickly' (conceptually close).

Although this explanation is convincing there is still an underlying problem. In (11b) we have interpreted *goizetik gauera* as 'quickly', that is to say, we think this person became rich in a short period of time, perhaps too short for us to believe it possible. Now, this type of inference is not given by the context itself, but by our own cultural understanding of how much time we need to become rich. This type of sentence is a good example of a 'pragmatic scale'.[9] Scalar models are very useful for extracting correlations that "allow us to reason from the degree of one aspect of a situation to the degree of some other aspect of the situation" (Fauconnier and Sweetser 1996: 25). As these authors argue, these models do not only apply to experientially based scales, but also to grammatical constructions, and (11b) is an example for it. In this sentence, we construct and make use of our own cultural understandings that becoming rich needs a scale of temporality. It is necessarily on the basis of this pragmatic scale that we can make the inference that this person became rich too quickly.

4. The Blend

All throughout this paper, we have been pointing out different factors that could help us to explain non-physical motion usages of the CP construction. In the previous section we have proposed two parameters: (i) the conceptual distance between source and goal, and (ii) the repetition of the lexical items in the roles of source and goal. These parameters, together with the pragmatic function of contextual and cultural information, interact with each other, and it is only through this interaction that we can account for these expressions. So the question is now how to show this interaction.

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[9] See Fauconnier 1997: 25-33, 179-80; Fauconnier and Sweetser 1996: 25.

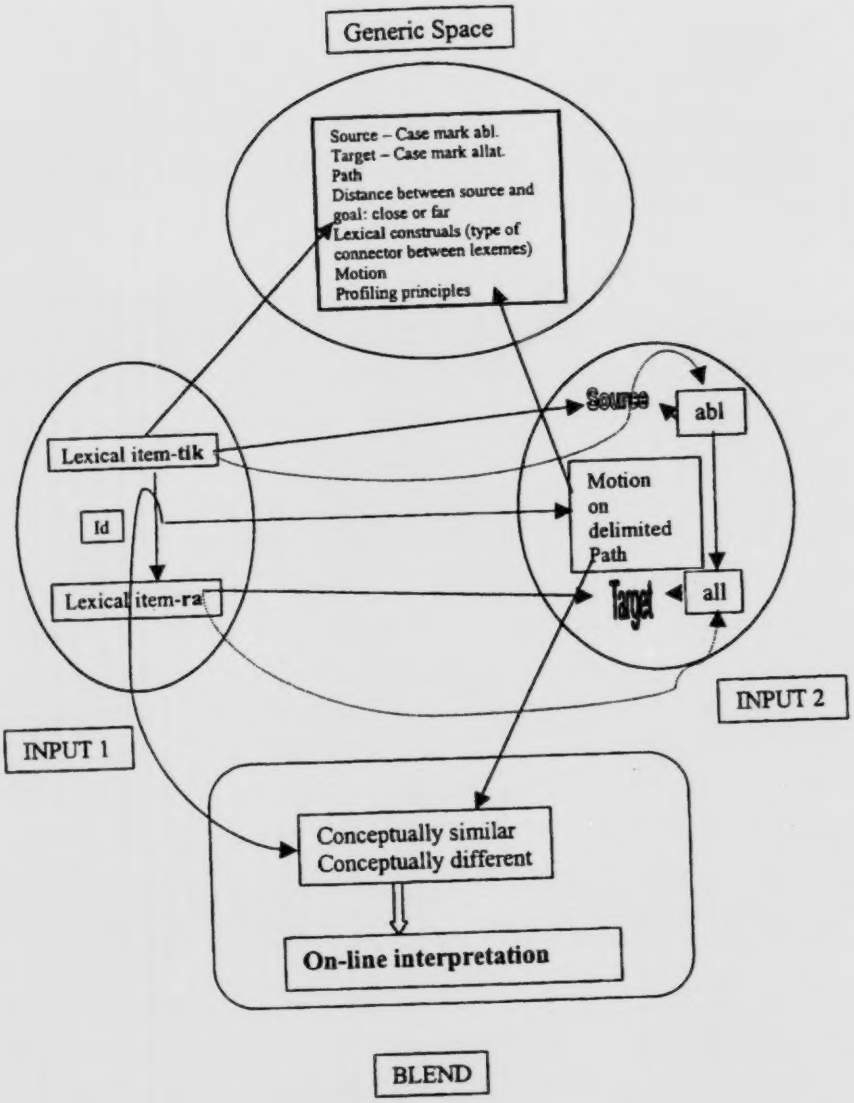
We need to know whether there is any model that would allow us not only to integrate all these different aspects but also to choose when we want to use one aspect or the other. We argue that Fauconnier and Turner's (1998, 2002) Conceptual Integration or Blending theory is such a model, and in the reminding of this section we will show it.

Conceptual Integration is a basic mental operation that creates networks of connections between different spaces. These spaces in turn can function as inputs to a new, blended space which contains not only information from these input spaces, but also new emergent information not contained in them. One of the advantages of this general cognitive operation is that it can be applied to many areas of thought and action. In reference to the relation between blending and grammar, Fauconnier and Turner (1996, 1998, 2001) claim that

> In grammar, certain abstract scenarios are represented by corresponding grammatical constructions. A given construction goes with a given schematic scenario. To describe events using that construction is to prompt the hearer to integrate those events into that schematic scenario (…) in these ways, blending is a central process of grammar. (Fauconnier and Turner 2001)

In the case of the CP construction, we argue that this construction provides us with the "way" scenario, which will prompt us to build the pertinent conceptual network to integrate all the relevant aspects that we have discussed in previous sections, namely, the meaning CP construction, the two parameters, the lexical items themselves (with their own metaphorical implications, some of them being basic conceptual metaphors, some of them culturally embedded in the conceptualizations of the body, and some of them constraint by pragmatic connections), and contextual and pragmatic information.

All the aspects are integrated in the blending model in Figure 3.


Generic Space
Source – Case mark abl.
Target – Case mark allat.
Path
Distance between source and goal: close or far
Lexical construals (type of connector between lexemes)
Motion
Profiling principles
Lexical item-tik
Id
Lexical item-ra
INPUT 1
Source
abl
Motion on delimited Path
Target
all
INPUT 2
Conceptually similar
Conceptually different
On-line interpretation
BLEND

The linguistic expression itself and hence, the relationships between its lexical items will go into the Input Space I, the information provided by the CP construction itself into the Input Space II, the skeletal information of both input spaces: the relation between the lexical items and the semantics provided by the CP construction into the generic space; and finally, the result of the interaction between all these elements in the Blended Space.

5. Conclusions

The main aim of this paper has been to build a model that could account for non-physical usages of the CP construction. We have argued that this model should be able to integrate all the relevant factors that play a role in these usages. These factors were the meaning of the CP construction, the lexical items (their meaning, their relationship on the basis of similarity, the repetition of the lexical item), and contextual and cultural information.

First of all, we developed a typology that could account for the lexical items that are used in the CP construction. This typology, as shown in Table 1, was based on two parameters: (i) the conceptual distance between source and goal, and (ii) the repetition of the lexical items in the roles of source and goal.

	Short distance → similar	Long distance → different
Different lexical item	*Ahotik eskura*	*Argitik ilunera*
Same lexical item	*Gezurretik gezurrera*	*Belaunetik belaunera*

Table 1: Typology of non-physical usages of the CP construction

Secondly, we proposed that the only model that could integrate all these factors was Fauconnier and Turner's blending theory. Thanks to this model, it was possible to integrate the information about the lexical items in one input space, and the meaning of the CP construction on the other. The different dynamic integration processes between these two spaces resulted into new blended spaces that will account for the usage of these expressions.

This paper has been intended as a first approximation to the analysis of the Complete Path construction. As such there are quite a few issues that we have not been able to deal with in the present article, we will point out the following:

(i) their different degree of idiomaticity. Some of these expressions, for example *hitzetik hortzera*, are taken as fixed expressions in the language, and therefore, they can be found as separate lexical entries in any dictionary. Their status is different to other expressions such as *gezurretik gezurrera*.

(ii) their productivity with respect to novel expressions. The usages that we have analysed in this paper are not restricted to a bunch of expressions; they are productive provided that the lexical items that we put together are considered as conceptually linked.

(iii) the internal relationships that hold within the lexical items. The meaning convey by the lexical items is not always straightforward. We need to retort to cognitive mechanisms such as metaphor and metonymy, as well as contextual and cultural knowledge in order to fully understand what they mean. For instance, in *ahotik eskura* the lexical items 'mouth' and 'hand' are understood via metonymy as 'saying' and 'acting'. In *kukutik kukura*, on the other hand, it is not enough to know that *kuku* is the bird 'cuckoo', we need to have some cultural background in order to understand that in this expression, the relevant aspect about cuckoos is that we only hear them singing on very specific occasions, and only by knowing this we can understand why this expression means 'rarely'.

In order to fully understand the CP construction we will need to describe and give a coherent account for these issues, and we intent to do so in future analyses of the CP construction.

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Humor through 'double grounding': structural interaction of optimality principles

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Abstract

This paper deals with a specific conceptual integration strategy (*double grounding*), which reveals a structural interaction of different optimality principles (metonymic tightening, topology, relevance, unpacking, network relevance). Through this interaction, a 'relevant element' in the blend is interpreted with respect to two input spaces, thus creating a humorous effect. The analysis of four examples, taken from different kinds of discourse, shows that a common space configuration as well as a schematic pattern of interacting optimality principles seem to underly all double grounding instances.

1. Introduction

Over the last decades, some research has been done on the fundamental role played by conceptual blending in the generation and reception of humor. However, considering the huge amount of studies on the cognitive principles underlying humor (Attardo (1994, 1997), Raskin (1985)), the processes of compression and integration have largely been dealt with in the margin. A pre-theoretical resp. restricted notion of blending in humor was introduced by Koestler (1964) and Hofstadter & Gabora (1989). The former vaguely describes his perception of blending in humor as the "sudden bisociation of an idea or event with two habitually incompatible matrices" (1964: 51), whereas the latter analyzes a subtype of humor involving *slippages* and labels it frame-blending. Although Hofstadter & Gabora (1989) do not recognize blending as a central human cognitive ability underlying – apart from humor – grammar, counterfactual reasoning, scientific invention, etc., he does introduce some of the notions central to blending theory in a pre-theoretical manner.

Within the conceptual integration framework developed by Fauconnier, Turner, etc., especially Coulson (2001, in press) has drawn attention to the fact that blending is one of the sets of processes underlying humor. In her analysis of cognitive strategies underlying jokes, she provides an in-depth description of the phenomenon called *frame-shifting* (Coulson 2001). In Coulson (in press), she gives an account of frame-blending, as introduced by Hofstadter, within the larger framework of conceptual blending theory. Whereas Coulson is mainly dealing with the constitutive principles of blending in humor, as e.g. cross-space mapping, partial projection, completion, etc., the present study primarily focuses on the interplay of optimality principles in cartoon humor and humor in general. More specifically, we will be dealing with a process we coin *double grounding*, in which metonymic tightening combines with the optimality principles of unpacking, relevance and topology to create a humorous blending effect. In unpacking the blend, the hearer resp. reader is urged to project back one element in the blend onto non-counterpart elements in two distinct input spaces. The analysis in section 3 will reveal a common blueprint for the space configuration in instances of double grounding.

2. Optimality principles and humor: a contradictio in terminis?

Research on humor, from its earliest descriptions in Aristotle and Plato in the Greek tradition, has acknowledged that the humorous effect is in part based on an *incongruity* of some sort. Major theories of humor take as their starting point that humor presupposes an incongruity and the resolution of this incongruity[i]. The process of resolving the incongruity is described by Coulson (2001) in terms of the above-mentioned notion of *frame-shifting*. Confronted with the incongruity in, let's say a joke, the reader/hearer is urged to perform the conceptual feat which is frame-shifting, thus triggering the humorous effect.

However, the present study deals with editorial cartoons which depict, interpret and assess current events. This type of cartoon does not seem to be based on the kind of incongruity or disanalogy underlying jokes or joke-like humor. The humorous effect in editorial cartoons, which is more subtle than in jokes, is mainly triggered by the ambiguity of either an element in the representation or a word in the caption accompanying the cartoon[ii]. Since it is not our purpose to provide a typological account of cartoon humor, we will not go deeper into these issues in the present study.

Confronted with the concepts *incongruity* and *ambiguity*, one is left with the question to what extent optimality principles are met in humor involving blending. Do incongruities in a blended cartoon preclude the satisfaction of the governing principles aiming at optimality in blending? Is optimality a context-independent variable or does the purpose of the integration influence the balance between the optimality principles?

One is inclined to think that optimality is all but achieved in humorous blends, in that the overarching governing principle of human-scale blending, Integration, intuitively seems to be unfulfilled. However, as Coulson (in press, 10) points out, it is the incongruity of the blend in e.g. a cartoon which serves as the ultimate anchor for the viewer in his job of unpacking the blend and projecting back structure to the different input spaces. In other words, the incongruities which make up the puzzle to be solved are a powerful clue for the viewer that blending is involved and that elements from the blend need to be projected back to several input spaces.

To conclude this introductory chapter, we will briefly sum up the optimality principles[iii] of blending relevant in the analysis of double grounding as a humor-triggering device (Fauconnier & Turner 2002: 314):

A) Governing Principles for Compressing Relations
1) Borrowing for compression
    2) Single-relation compression by scaling
    3) Single-relation compression by syncopation
    4) Compression of one vital relation into another
    5) Scalability
    6) Creation by compression
    7) Highlights compression

B) Other governing principles
- Topology
- Pattern Completion
- Integration
- Promoting Vital Relations
- Web
- Unpacking
- Relevance
- Recursion

3. Double grounding

3.1. Instances of double grounding in cartoons, billboards, etc.

3.1.1. Injecting Innogenetics

The following cartoon (figure 1), which was printed in issue n°13 (2001) of *Trends*, a Belgian magazine, refers to the precarious financial situation of *Innogenetics*, a Belgian genetic engineering company, owned and financially supported by a German mother firm. In the cartoon, the Innogenetics company building receives an injection with a hypodermic filled with a 100 Deutschmark note. The accompanying text line says: "Fresh money gives Innogenetics breathing space". In this cartoon, three input spaces can be identified. Two of them are linked as source and target (inputs 1 and 2) of a conventional metaphor COMPANIES ARE PATIENTS, according to which companies in need of financial support are represented as patients, who need help and treatment, which can consist of, for instance, receiving an injection with medicines, vitamines, etc. (see Jäkel 1997). The topology of this input space is projected onto the blend: a hand holds a hypodermic, the content of which is injected into a building. The small drop of blood on the building elaborates on the topological structure of the PATIENT-input inside the blend (*running the blend*).

In the blend (figure 2), this metaphorical structure COMPANIES ARE PATIENTS interacts with another conventional metaphor: MONEY IS A FLUID, which is depicted by a local blend of a bank note (target) curled up inside the hypodermic (source). A third input space is the specific INNOGENETICS–space which elaborates (contextualizes) the target domain (input 2) of the conventional metaphor COMPANIES ARE PATIENTS. This input space contains, apart from general knowledge about genetic engineering, more specific concepts related to this particular firm, such as the Belgian city of Gent, a German mother company, financial problems, and - incidentally - also the outline of the actual company building. From this input space, the building with the company name on it is projected onto the blend, where it metonymically stands for the company in its role of patient.

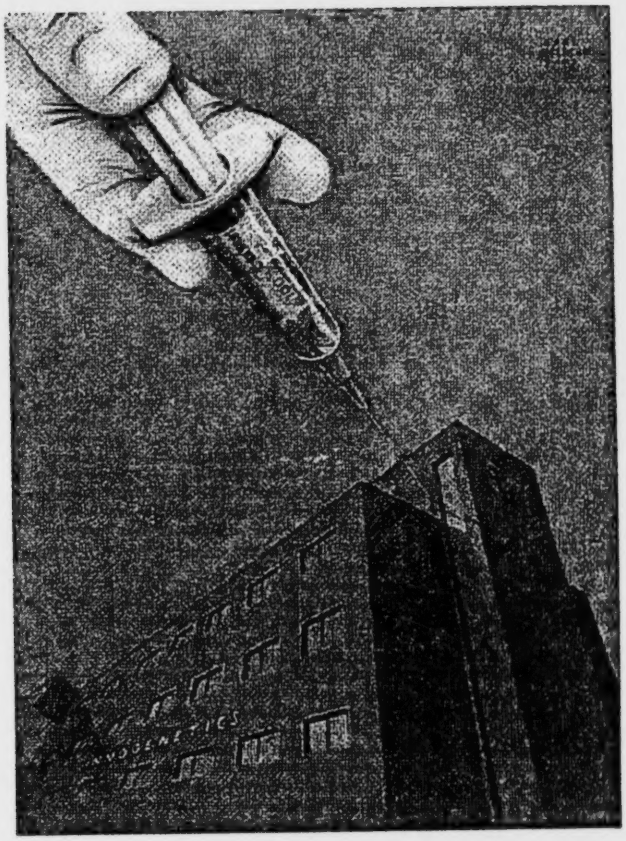


Figure 1

Of particular interest in the context of the present paper is the structural importance of the hypodermic in this cartoon. It primarily functions as a prompt for unpacking the blend and establishing (new) relations between two input spaces (**network relevance**). The incongruity of a hypodermic being placed in a relationship of direct contiguity with a building prompts us to view the scene as being composed of elements coming from different input spaces. Embedded in the context of financial discourse, the image of a hypodermic being used to inject something into a company building triggers the conceptualization of the conventional metaphors COMPANIES

ARE PATIENTS and MONEY IS A FLUID. The hypodermic is projected together with the topological structure from the source domain of the conventional metaphor. It is important to notice, however, that the hypodermic as a prominent instrument in genetic engineering also relates to the input space INNOGENETICS. Thus, the blend contains one element which is functional in two inputs. Crucially however, both input instances of the hypodermic concept are **not** mapped onto each other directly between the input spaces. It is only in the process of unpacking the blend that a second grounding, i.e. interpretation of this element in one of the input spaces is activated.

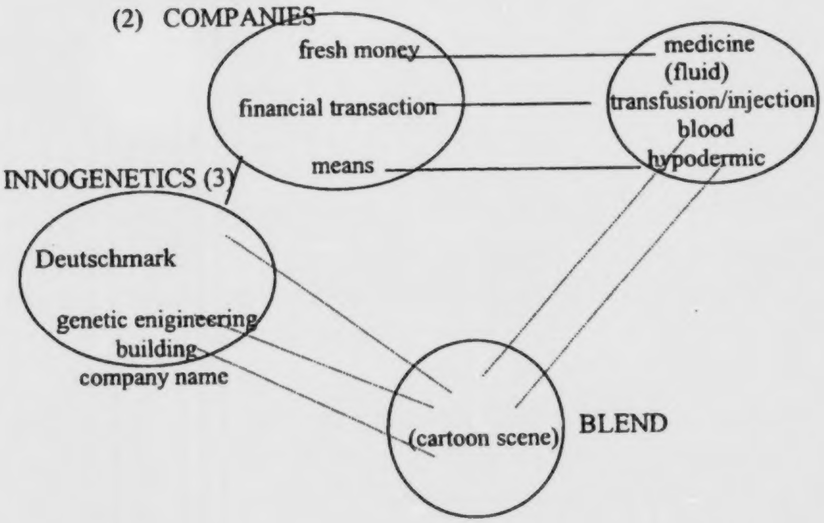

(2) COMPANIES
fresh money
financial transaction
means
medicine
(fluid)
transfusion/injection
blood
hypodermic
INNOGENETICS (3)
Deutschmark
genetic enigineering
building
company name
(cartoon scene)
BLEND

Figure 2

Although in both inputs, the hypodermic is related metonymically to the 'central' concept (PATIENT, INNOGENETICS), there is an obvious difference in salience between both metonymic structures, which can be explained as discrepancies in conventionality and contextual relevance. In an economic context of companies having financial problems, the metonymic interpretation of a hypodermic with regard to the PATIENT input is far more salient[iv] than its interpretation as a device in genetic engineering. Furthermore, this difference in salience between both interpretations seems to be determined by the fact that PATIENT also functions as the source domain of a highly conventional metaphor COMPANIES ARE PATIENTS, the target domain of which serves as yet another input for the blend. With regard to the INNOGENETICS input, the metonymic interpretation of the hypodermic as a research instrument is not part of any conventional meaning structure, nor is it supported by the general context of this cartoon. The non-conventionality of this metonymic structure is to be attributed to the relatively large distance between the concepts involved in this metonymy: the hypodermic only stands for the Innogenetics company through the relation of "a typical device used in genetic engineering, which is a basic activity of the Innogenetics company". In unpacking the blend, this rather distant structure in the input is subject to a process of **metonymic tightening**. In the blend, the Innogenetics company is represented directly by a distant feature: a typical device used in a type of research which is the basic activity of this firm. Hence, whereas with regard to the source domain of the conventional metaphor, an established metonymy is projected onto the blend, an element pertaining to the INNOGENETICS input is metonymically tightened in the blend.

It is important to see that this type of conceptual integration is not to be categorized as fusion, where an analogous structure in different inputs is projected onto one single element in the blend. This operation presupposes a 'previous' mapping of counterpart elements.

We therefore claim that in a case like this one, there is no equivalent projection of two elements onto the blend. Rather, along with the topology of the source domain of a conventional metaphor (input 1), one specifically relevant element is projected onto the blend. In the blend, this element integrates with other elements from the metaphorical input (inputs 1 and 2), thus supporting a contextually salient metaphoric meaning. Additional to this integration process, however, the same element links to another input space (input 3), where it appears in another – distant metonymical – relationship. Crucially, from this input space, the element involved does not correspond to any other element in the metaphoric target domain (input 2). Precisely by unpacking the blend onto two input spaces and thus creating a new, previously 'unnoticed' mapping, a subtle humorous effect is achieved. This operation of conceptual integration, in which one element in the blend is meaningfully linked to two different input spaces, thus creating a humorous effect, can be labeled **double grounding**.

With regard to the underlying cognitive mechanisms of conceptual integration patterns, the description of this phenomenon offers an important insight into the interplay of different optimality principles. In our account of double grounding, several optimality principles appear to be activated:

1) **topology:** the topology of one input space – in this case the source domain of a conventional metaphor - is projected onto the blend;

2) **relevance**: a structurally relevant element is selected from one of the inputs and projected onto the blend, where it activates a primary, contextually salient interpretation (meaning); in this case, an element is projected from the metaphoric source domain.

3) **unpacking**: in unpacking the blend, the 'relevant element' prompts for a second interpretation with regard to another input (not just 'back projection' onto the original input); in this case, a non-conventional, rather distant metonymic structure is activated in the blend;

4) **metonymic tightening**: in unpacking the blend, a distant metonymic link is tightened.

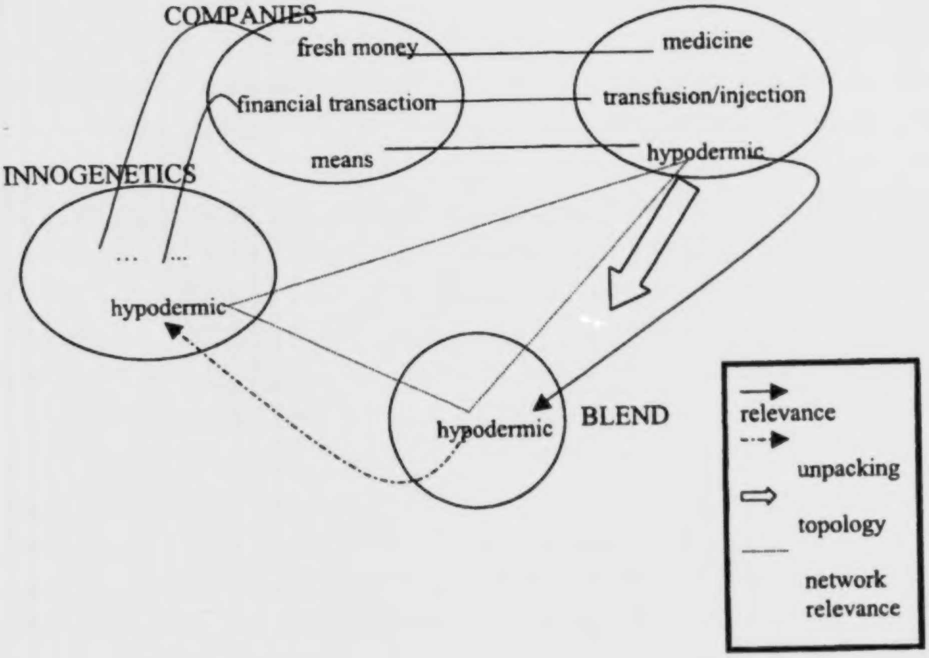

COMPANIES
fresh money
financial transaction
means
medicine
transfusion/injection
hypodermic
INNOGENETICS
... ...
hypodermic
hypodermic
BLEND
relevance
unpacking
topology
network relevance

Figure 3

Figure 3 represents the location and directionality of these different optimality principles as they occur throughout the optimal (intended) interpretation process of this cartoon. It shows how a relevant, metonymically structured element together with the topology of the metaphorical source is projected onto the blend. In unpacking the blend, a double grounding configuration (network relevance) is achieved, leading to a humorous interpretation. It should be noticed that, in representing the optimality principles this way, two perspectives are being 'blended', with every optimality principle preferably operating within one of both perspectives. On the one hand, there is the perspective of the cartoon producer (relevance, topology), with the perspective of the 'reader' (unpacking, network relevance) on the other.

3.1.2. Ariel (Sharon)

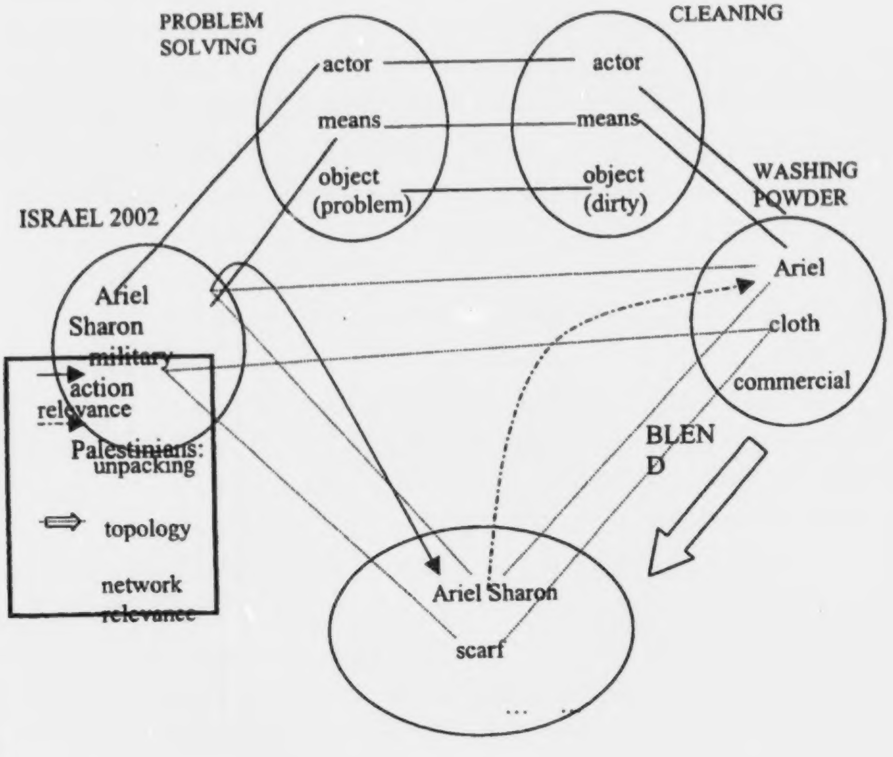
The next example (figure 4) represents a poster which was distributed by a Belgian nongovernmental organisation called *Actie Platform Palestina* ('Action Platform Palestine'). It formulates a cryptical but highly critical remark at the address of Israel's prime minister Ariel Sharon with respect to the violence in the Middle East. The poster consists of a visual part representing a blood stained Palestinian scarf which is demonstratively being held by a fist. The Dutch text line accompying this scene says: *Hoe krijgt Ariel Sharon dit nog proper?* ("How will Ariel Sharon get this cleaned, then?").

Just as in the previous example, this blended scene also distinguishes two input spaces, which form the source (input 1) and target input (input 2) of a conventional metaphor: PROBLEM SOLVING IS CLEANING. In this metaphor, the problem to be solved is structured as a dirty object which needs to be cleaned. The person who is considered to be in charge or even able of solving the problem maps onto the person who is responsible for the cleaning etc. In this scene, both the source and target domain are elaborated in a conceptually rich input: the target domain is elaborated as ISRAEL ANNO 2002 (input 2') whereas the source domain appears as WASHING POWDER (input 1'). The input ISRAEL ANNO 2002 contains all relevant information pertaining to the actual Israeli-Palestinian conflict in the Middle East, with Ariel Sharon as the central actor, who has to deal (and is dealing) with what might be called the 'Palestinian issue'. From this input space, elements such as the blood-stained scarf, the fist symbolizing Palestinian protest, as well as the name of Ariel Sharon are projected onto the blend. From the input WASHING POWDER the brand name ARIEL as well as the scarf (as an instance of a dirty piece of clothing) can be linked to the blend. Also, the word *proper* ("clean, not dirty"), a nonstandard regionally marked word (Flemish), refers to this input space. Furthermore, just like in the INNOGENETICS-example, the topology in the blended scene is imported from the (elaborated) source domain of the conventional metaphor. In this case, the topology of the blend is that of a washing powder commercial, in which dirty clothes are presented accompanied by a (desperate) question of the sort "Can you clean this using your traditional washing powder?" or "How am I ever supposed to clean this!?" The scenario of a washing powder commercial always ends with the presentation of shiny clean clothes as a never expected result of the product, illustrating its amazing pow(d)er. This example crucially makes use of double grounding as a cognitive strategy: the element *Ariel* appears as the first name of Israel's prime minister but also as the brand name of a washing powder. Here also, a subtle 'humorous' effect is created by linking two input spaces in unpacking the blend.

As far as the selection and projection onto the bend of a so-called 'relevant element' is concerned, this scene does not run parallel to the previous example, where the hypodermic was brought into the blend together with the topology of the metaphoric source domain. In this example, the relevant element which triggers the primary, contextually salient interpretation is the name *Ariel Sharon*, which is projected from the (elaborated) *target* of the conventional metaphor[v]. In the blend, the name *Ariel Sharon* is integrated with the commercial-like predicate being imported from the elaborated source input. This integration leads to an interpretational incongruity, which prompts for an unpacking of the blend onto other input spaces. In doing so, *Ariel* (*Sharon*) is 'reinterpreted' as *Ariel* washing powder.

Interestingly, there is an additional element in this scene which is subject to a double grounding interpretation. Parallel to the double interpretation of *Ariel*, the scarf is not just seen as a symbol of Palestinian bloodshed. Through the additional link with the WASHING POWDER input, the scarf also gets interpreted as an ordinary piece of cloth covered with stains, which needs to be cleaned.

The political message of this protest poster lies in the implied negative answer to the question. As a result of what might be called *functional partial projection*, the topological positive result of the washing powder input (commercial scenario) is *not* projected onto the blend. Instead, the expected negative result related to the ISRAEL 2002 input (hardly anyone believing that the problem can be resolved peacefully) is integrated with the topology of the washing powder input. Unlike miraculous washing powders Ariel Sharon will not be able to clean the scarf. This interpretation (meaning) might be triggered by the compression of two oppositional semantic roles into one actor. In this scene, Sharon is presented at the same time as the ultimate agent (cause) in the military solution to the 'Palestinian problem', represented here by its effect: the blood stained scarf. On the other hand, the question raised here represents Ariel (Sharon) as the ultimate agent of cleaning the scarf. So, within the topology of the blend, the incongruity also lies in the presentation of Sharon both as the person responsible for both staining and cleaning the scarf. This compression suggests the negative answer to the question.


PROBLEM SOLVING
actor
means
object (problem)
CLEANING
actor
means
object (dirty)
WASHING POWDER
Ariel
cloth
commercial
ISRAEL 2002
Ariel Sharon
military action
Palestinians:
relevance
unpacking
topology
network relevance
BLEND
Ariel Sharon
scarf
...

3.2. Double grounding in word play

3.2.1. Michelin being punctured

Based on the analysis so far, one might be inclined to assume that double grounding is a process in conceptual blending typical of and uniquely reserved to the cartoon code. However, as we showed in earlier work (Brône & Feyaerts 2002), double grounding is to be found in other kinds of 'text' as well, especially in highly compressed text types (newspaper headlines, one-liners, stock market reports, etc.).

(1) U.S. slowdown *punctures* Michelin's profits

Example (1) refers to the 28.4 per cent fall in the net profit of the tyre producing company Michelin, following a slowdown in the U.S. automobile industry in 2001. In this context, the verb *to puncture* instantiates a conventional conceptual metaphor meaning "to put an end to, to decrease". The target concept NEGATIVE FINANCIAL DEVELOPMENT is metaphorically structured as PUNCTURING AN INFLATED TYRE/BALLOON. This projection elaborates a more schematic metaphor ECONOMIC DEVELOPMENT IS INFLATING OR DEFLATING AN OBJECT, according to which the increasing size of an object being inflated maps onto the increasing (financial, economic, ...) quantity of a target entity[vi]. As to the blending configuration of this stock market report, just like in the previous examples the source and target of a conventional metaphor (NEGATIVE ECONOMIC DEVELOPMENT IS DEFLATION) provide two input spaces, the topology of the source being projected onto the blended space. A third input space, MICHELIN 2001, is the elaboration of a concept in the metaphoric target input. Analogously to the previous examples, a 'relevant element', metonymically profiling the cause of the process being referred to

(DEFLATION – NEGATIVE FINANCIAL EVOLUTION), is projected from the source onto the blend. Through the occurrence of the blend in an economic context, this element prompts a primary salient interpretation in terms of the conventional metaphor. In unpacking the blend, however, the relevant element *puncture* also links up with the input MICHELIN 2001, where it relates in a rather distant metonymical way to the company Michelin: Michelin produces tyres and a tyre is one of those objects which can be in- and deflated. One of the many ways in which an inflated tyre can be deflated, is by puncturing it. This distant metonymic relationship, which is tightened in the blend, provides the double grounding of this stock market report turning it into a pun-like utterance. Figure 6 represents the configuration of this blend, also indicating the different optimality principles involved.

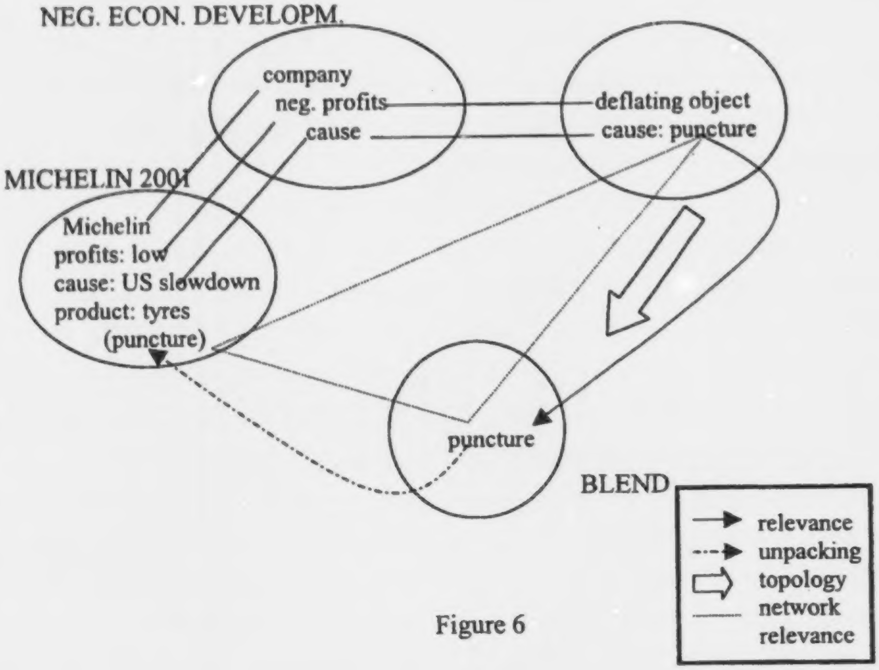

NEG. ECON. DEVELOPM.
company
neg. profits
cause
deflating object
cause: puncture
MICHELIN 2001
Michelin
profits: low
cause: US slowdown
product: tyres
(puncture)
puncture
BLEND
relevance
unpacking
topology
network relevance

Figure 6

With respect to this example, an additional aspect of optimality principles underlying humorous blend structures like the ones discussed here, can be described. As in this stock market report, the financial troubles of the tyre producing company Michelin are at stake the reporter commenting the situation might deliberately ‘select’ the DEFLATE/INFLATE conventional metaphor in order to obtain the humorous effect in the headline. Accordingly, figure 6 should contain yet another Relevance-arrow leading from the MICHELIN 2001 input space as a whole to the metaphorically connected input spaces 1 and 2.

3.2.2. Dracula and the health care industry (F & T 2002: 279-284)

Our last example is taken from Fauconnier & Turner (2002: 279) in their analysis of multiple blends. They briefly discuss a textual example involving double grounding and label it *opportunistic recruitment*. The text they refer to deals with the health care reform carried out by former U.S. president Bill Clinton:

> What president Clinton did, bravely and brilliantly, I think, was to gamble that the repertory actors of the health care industry have frightened Americans so badly that we are willing to accept anything, including higher taxes, rather than to continue being extras in a medical melodrama that resembles nothing so much as an endless “Dracula” movie where the count always wins, right up to the last drop. … The Dracula crowd will scream “socialized medicine” and moan that you won’t be able to pick your own doctor (F & T 2002: 280).

The excerpt above prompts for a multiple blend network with three input spaces, two of which are connected to the third input space as the source of a metaphorical projection. The input space constituting the target of the double metaphorical projection is the HEALTH CARE INDUSTRY, profiling the health care professionals (doctors, health insurance agents, etc.) and the public (patients) as participants (input 3). The input space of HEALTH CARE is structured metaphorically by two different inputs. First, there is an input structured by elements belonging to the domain of MOVIE MAKING. Participants in this input are repertory actors (actors who have made their way to the top and frequently acquire leading roles) and extras (actors whose contribution is often restricted to minor supporting roles). The cross-space mapping between counterparts in the input spaces (repertory actors and health care professionals; patients and extras) constitutes the metaphoric projection from the source input of MOVIE MAKING onto the target of HEALTH CARE. A second input which metaphorically structures the input of the health care industry is the horror story of COUNT DRACULA the Vampire. The central participants in the frame offered by this input, vampires and their victims, are linked by cross-space mappings to, respectively, the health care professionals and patients in the health care input. Thus, a multiple blend configuration arises which consists of two metaphoric blend networks which share the same target input space of the metaphorical projection (HEALTH CARE INDUSTRY).

However, as Fauconnier & Turner (2002: 280) point out, the two input spaces constituting the source of the metaphors, the MOVIE MAKING input and the DRACULA input are linked by a Drama cross-space mapping. The story of Dracula and the vampires sucking human blood has been turned into countless movies. Thus, the different inputs and the blend constitute a tight-fitting web of mental spaces in the configuration. This type of web lends itself excellently for phenomena like *double grounding* (or *opportunistic recruitment*, to use F & T's terminology). Consider the additional statement on the health care reform (F & T: 2002: 282): "The count always wins, right up to the last **drop**"[vii].

The concept of BLOOD is primarily part of the topology projected from the DRACULA source input. Blood and bloodsucking indeed are frequently profiled concepts in the metaphorical projection onto targets involving (the transfer of) money. However, blood also plays a non-salient role within the topology of the HEALTH CARE input. Once again, it should be emphasized that the concept of BLOOD shared by both inputs is not linked by a cross-space mapping: "The editorialist is not accusing the hospitals of trying to take human blood away from the patients" (F & T 2002: 282). In the process of unpacking the blend, the concept of BLOOD, salient within the topology offered by the source input (Dracula), can additionally be projected onto the target input (health care), where it plays a non-salient role within the topology. Within the HEALTH CARE input, blood is not part of the conventional meaning structure and is only triggered via a weak metonymic link. By unpacking the blend and projecting the concept of BLOOD, delivered by the DRACULA input, onto the target input, this weak metonymic link is **tightened**. In the blend, then, the concept of BLOOD additionally becomes an anchor for the projection onto the target input.

What is crucial is that an established metonymy is first projected from the source of the metaphorical projection along with the topology delivered by this input (BLOOD as object being sucked by Dracula-vampire). Only secondarily, in the process of unpacking the blend and establishing links to the HEALTH CARE input from the blend, the weak metonymic link between health care and blood is tightened. The resulting network is represented in figure 7.

A structural difference between the present example and the Innogenetics-cartoon is that here the ambivalent concept is directly related to both the source and target input, whereas with Innogenetics, the double grounded element was related to the metaphorical source input as well as to an input space which is an instantiation of the target input. A structural comparison of different instances of double grounding configurations raises the question as to how and when input spaces should be identified as autonomous spaces *or* as mere elaborations of a schematic concept within a single space instead.

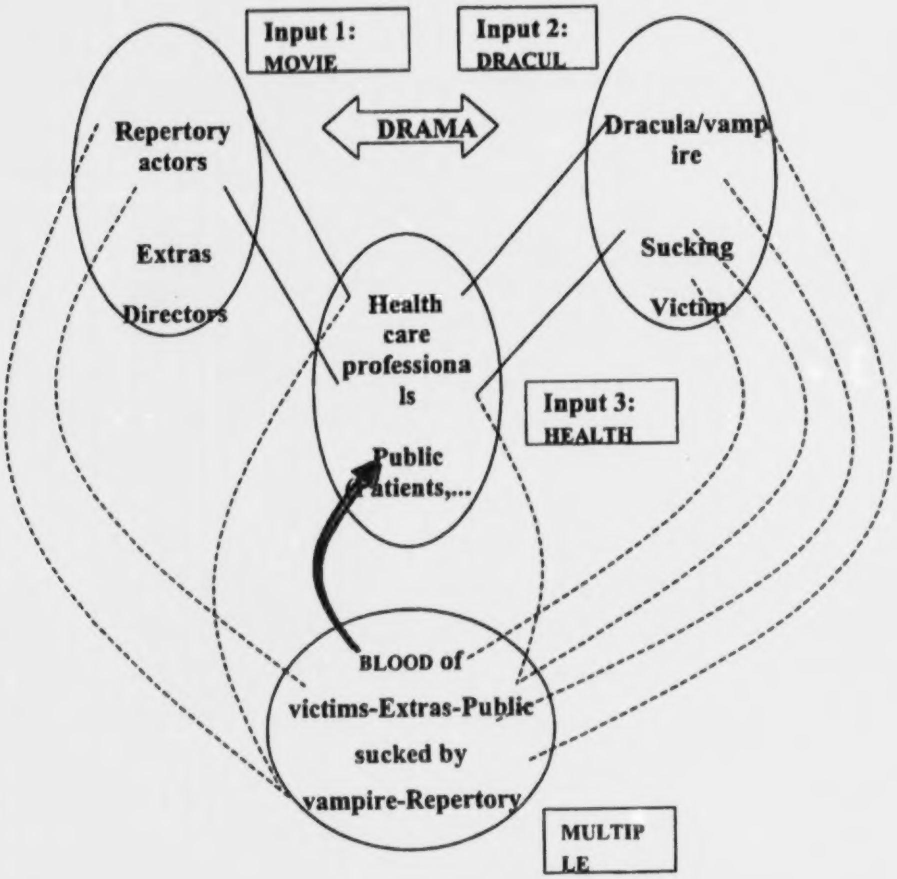

Input 1: MOVIE
Input 2: DRACUL
DRAMA
Repertory actors
Extras
Directors
Dracula/vampire
Sucking
Victim
Health care professionals
Public
Patients,...
Input 3: HEALTH
BLOOD of victims-Extras-Public sucked by vampire-Repertory
MULTIPLE

Figure 7

4. Conclusion

In these four examples, we have looked at a conceptual integration strategy, *double grounding*, by which a humorous effect is created through the interaction of different optimality principles (metonymic tightening, topology, relevance, unpacking, network relevance). The analysis of these examples has revealed a common blueprint for the space configuration in instances of double grounding. Basically, the space configuration consists of source and target of a conventional metaphor (inputs 1 and 2) with additionally one or more inputs (contextualizations) elaborating at least one of these inputs. The blend is structured by the topology of the metaphoric source input. The phenomenon of double grounding hinges on the projection of a 'relevant element' from within the conventional metaphor (mostly the source) onto the blend. The context the blend appears in as well as the conventionality of the metaphor prompt a primary, salient interpretation of this element in the blend. By unpacking the blend onto another input space, however, a secondary, less salient interpretation is activated as well. In this secondary interpretation (one cannot speak of a conventional 'meaning') the distant metonymic relationship the relevant element is involved in, is tightened in the blend.

Although many questions still need to be answered, this cognitive strategy seems to shed some interesting light on the functional interaction of optimality principles with regard to humor. Apart from the theoretical relevance of this phenomenon with regard to the blending model, it seems worthwile looking at the question to what extent pun-humor (and other kinds as well) can be adequately explained in terms of (different) double grounding configurations.

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Notes

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[i] For a detailed survey of incongruity-resolution theories of humor, see Attardo (1994).

[ii] A second major subtype of editorial cartoons involves analogical blending. A striking analogical link between two input spaces is exploited by compressing it in the cartoon-blend and inferences in the blend are projected back onto one or more inputs in the space configuration (Brône, in preparation).

[iii] These principles are extensively described in Fauconnier & Turner (1998, 2002).

[iv] In her *graded salience hypothesis*, Rachel Giora (1997: 200) argues that "meanings [are] made salient through, e.g., conventionality, frequency, familiarity or context".

[v] Note, however, that the blend would also function – creating an even greater humorous effect – wenn just *Ariel* instead of *Ariel Sharon* would have been used in the question. By doing so, the relevant element would have been projected onto the blend together with the topology of the source input.

[vi] Accordingly, the economic term *inflation* refers to an increase of the price level.

[vii] Emphasis not in the original text.

Entrenchment facilitated through Iteration in Blended Constructions in Hungarian

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Extended abstract

The paper investigates the psychological effects contributing to entrenchment in general, and entranched linguistic expressions acquiring special conceptual status in linguistically relevant conceptual structures in particular. Entrenchment is analyzed in terms of memory, retreival, priming, prompting, collocational force and co-occurance parameters. The entrenched constructions under investigation are claimed to be *lexemically unitized* and be the *result of an interplay between* language-specific phono-tactic and supra-segmental (prosodic) patterns, i.e. *phonological structures* on the one hand and non-compositional, semi-productive *semantic structures* on the other. Linguistic evidence is given to the claim that *the underlying mechanism of iterativity*, i.e. full or partial (modified) reoccurrence of some elements of the phonological structures generated and processed contributes in crucial ways to the nature and scope of the linguistic expressions under investigation. In general terms, an *entrenched expression* is familiar to speakers from frequent use. It is widely accepted that every perceptually enhanced and contextually bound use of a linguistic structure is thought to increase its degree of entrenchment in cognitive organization. There is substantial recent interest in linguistic units larger than single words but smaller than sentences.

The paper claims that partial conceptual mapping and non-compositional blending processes are greatly enhanced and crucially supported by the general phenomenon of iteration. Iteration phenomena range from „plain duplication" to „truncated, resemblance-evoking iterations" which are analyzed on a representative sample of Hungarian examples of „fixed expressions" or „pre-fabricated" linguistic constructions based on iteration including idioms, figures, sayings, proverbs and metaphorical/metonymical constructions. Beside the main focus on the specificity of Hungarian iterative constructions (especially attributed to vowel harmony, permutational root semantics and complex agglutinative affixation rules), a first comparative attempt is proposed based on similar examples fom Germanic (English and German) and Slavic (Russian) languages.

The structural classification is completed with a classification taking into consideration contextual parameters of use, especially those of style, genre and register.

A: ***full iteration*** (duplication)
‘to lead a ***catch-as-catch-can*** life’; ‘***boys will be boys***’; ‘let ***bygones be bygones***’(literal); ‘let’s call a ***spade a spade***’(non-literal); ‘ a ***hush-hush*** project’;
‘if ***worst comes to worst***’; Ger. ‘***Schlag auf Schlag***’ (swiftly); ‘***Schritt für Schritt***’ (gradually); Hung. ‘***napról napra***’ (from day to day)
B: ***partial iteration of elements*** (reduplicated elements)
‘***day in day out***’; Hung. ‘***várva várt*** esemény’ (a long-awaited event); ‘***körös-körül***’ (ubiquitously all about); ‘***gólya-gólya*** gilice’ (stork, childl.); ‘***meg-megáll***’ (makes frequent stops, verbal prefix iterated); ‘***be-benéz***’ (comes by habitually, verbal prefix iterated); ‘***éjek éje***’ (the darkest of nights); ‘csak ***ment***, csak ***mendegélt***’ (wandered aimlessly, aspectual change);
C: ***truncated iteration*** (resemblance-evoking reoccurrence of trigger elements as modified phonological patterns)

‘one has ***bats in the belfry***’; ‘one has ***ants in one’s pants***’; ‘one is ***betwixt and between***’; ‘***by hook or by crook***’; ‘one is full of ***fuss and feathers***’; ‘***hale and hearty***’; ‘***hem and haw***’; ‘***pit-a-pat***’; ‘***pig in a poke***’; Ger. '***gang und gäbe***’ (widely accepted); ‘ohne ***Sang und Klang***’ (without fuss); Hung. ‘***hébe-hóba***’ (very infrequent); ‘***hetet-havat*** összehord’ (incoherent speech); ‘***szegről-végről*** rokon’ (distant relative); ‘***immel-ámmal***’ (reluctantly); ‘***csere-bere***’ (transaction, playful)

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The Emotive Function of Poetic Imagery

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Abstact

In this paper I propose that the pleasure of poetry or any other aesthetic form is due to re-cognition and re-creation of schematic forms by mechanisms of Imagination. Following Ramachandran (1999) I claim that this recognition is created by a *peak shift effect*, which function it is to make recognizable the schematic form by activation of the limbic system which ensures a rewarding effect, defined as the emotional response to art, in the search for *structural stability*. In terms of conceptual integration I argue that Imagination is the ability to transcend entrenched embodied schemata and by cognitive principles as discussed in TWWT transform those schematic structures creating new *emergent meaning*. A crucial aspect of all creativity is how to transform those entrenched schematic forms which motivates the blending process in the first place maintaining them recognizable so that the rewarding effect of recognizing the schematic template, upon which creativity is displayed, can be produced. I thus claim that any mental space network work upon two layers of meaning: entrenched conceptual patterns, which I call *primary metaphors* according to Grady (1997) and Imagination which transcends and transforms our embodied notions creating new emergent meaning.

In what follows my concerns are these:

1) My first concern is *structural stability* being the primary component in meaning construction. This is a notion that I borrow from Catastrophe Theory. I analyse structural stability in terms of *primary metaphors* that I take to be conceptual universals resonating the (pheno) physical stability by cognitive (and possibly neuro-biological) schemas. This level of structural stability corresponds to the basic two-domain model in conceptual metaphor theory.

2) My second concern is Imagination being the other indispensable component in meaning construction. Here I tap into the crucial issue of all creativity: how can schematic forms be transformed and yet carry over structural stability? For that discussion I introduce the notion of *peak shift effect* to demonstrate how exaggeration of constituent structures comes to play a crucial role in art and evolution. This level also corresponds to what Grady (1997) calls non-primary metaphor; those that only arise through a process of blending and are more culturally invested creating at pregnance density. 1 and 2 can thus not be treated, as separate components but are always mutually definable: only within structural stability there can be wild imagination.

3) My third concern is Love being the ultimate transformative power by which we are fully recognized and created anew. Love thus lies at the core of Imagination possessing the strongest human force by which we can stay embodied and yet transcend our cognitive schemas. Love, however, requires loss of virginity, as a primary transformative process in which we alternate life and death: we die as one to become a unit. The purity of simplicity thus has to be given up in order to achieve complexity. Love as such is therefore the primary condition for all creation and the only true possibility for a real morphogenesis. In order to analyse this transformative process in which we transcend our selves and emerges in new forms I have chosen the following lines from the Spanish baroque poet Góngora

A virgin so beautiful that she could
burn all of Norway with two suns
and whiten all of Ethiopia with two hands

1) Structural stability: image-schemas and conceptual universals

In the following I discuss the primordial components of meaning construction: the kind of structural stability that we have access to through image-schemas and primary metaphors.

The notion of structural stability that I deploy is within the framework of Catastrophe Theory. The possibility of categorization understood as an ongoing re-cognition of a schematic structure is according to René Thom (1983) bound to the physical notion of *structural stability*. This notion is however not purely formal since it is determined by it's specific (biological) value for a single individual. Even our ability to what in blending theory has been called selective projection (as an analogy to selection among the perceptive inputs) is rooted in values as a survival strategy. Thom thus operates with a distinction between on one side a more formal definition of entities and on the other side the values that we ascribe them through the notions of *salience* and *pregnance*. In very simplistic terms we might say that salience is the emergence of the form and the pregnance is the dynamic possibilities of significance, which emerges through morphogenesis. As such the relationship between salience and pregnancy is mutually defined; the potential of the form is already there in the content, which on the other hand determines the content by the shape of it.

Another important contribution from catastrophe theory is the notion of resonance. Implicit in this notion lies the idea of oscillation; in Brandt's (2002) terms there is a response processing, an "efferent" flow as an answer to an impressive stimulus-processing "afferent" flow. For there to be an answer there has to be correlation of frequencies. So what meets the impressive process is a response, which captures and resonates the structural stability.

Image-schemas

One of the most important contributions that cognitive science has provided is the concept of image-schemas. This notion implies *an embodied enacted view of perception* based on an analogy between percept and concept on which Cognitive linguistics launches its fundamental hypothesises, the principles of conceptual integration being one of them. Even if perceptual and conceptual phenomena cannot be equated, the analogy between then is strong enough, as proposed by Grady (1997) to suggest, that it is the same cognitive mechanisms that govern both perception and conceptualisation even on a different scale of granularity.

Within the framework of Conceptual Metaphor Theory (CMT) and lately Conceptual Integration Theory or Blending Theory (BT) it has been argued that projection of image-schematic structure is that which ensures the structural stability and motivates the mapping in the first place. Within CMT this carrying over of structural stability has been known as the *invariance principle*, within BT the structural stability is achieved by a set of *governing* and *constitutive principles* (2002:346).

There exist, however a perhaps more fundamental distinction between CMT and BT, namely one side the CMT emphasis on embodied image-schemas versus the BT emphasis on projection of generic structure. Both versions acknowledges the importance of the schematic structure but it makes an not unimportant difference to insist on the experiential grounding of schemas as opposed to pre-supposed generic structures.

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I argue that rather than a projection of image-schematic forms poetic imagery creates a resonance between our schematic cognitive forms and the forms of organic things both of them biological and dynamic. It is of course a highly controversial claim that our mental schematic forms are genetic, milder versions saying that they are embodied in the way they are, due to the interaction between the environment and our neurobiological set-up, which are at least in principle falsifiable. Under any circumstances schematic forms, being pre-conceptual or not, are indispensable and unavoidable.

To talk of re-cognition of structural stability implies the idea of something already being there available for multiple activations through memory. This is the sense in which Mark Johnson (1987) defines a schema as a recurrent pattern in our experience and interaction with the physical world: " recurring structures of, or in, our perceptual interactions, bodily experiences and cognitive operations" (Johnson, 1987: 29).

Conceptual Universals

Lately Joseph Grady in his theory of *primary metaphors* (1997) has given a more detailed account of the kind of recurrent experiences that are universal and which structures meaning on the basis of our bodily interactions with the physical world. Grady discusses Johnson's notion of image-schemas wondering whether they belong more adequately in source or target which he defines as having image and structure content respectively:

Source concepts correlate more specifically with sensory input from the physical world, while target concepts relate to various sorts of responses to this input – judgement and analysis, of individual stimuli and of the relationships among them. They have in many cases the character of *functions* over external stimulus – e.g., the "calculation" that an object is appealing, or that an object has a particular part-whole structure (Grady 1997: 163).

In what follows I presume that both source and target are highly structured because they share the same schematic structure. Source being more related to the (pheno) physical world, target to the (neuro) biological world. In that sense we don't have an image-schema for Proximity or Similarity, but for Similarity as Proximity. This consequence is already implied in the "Deconflation Hypothesis", by which we according to Chris Johnson (1997) start out having a shared domain for seeing and knowing and only at a latter stage after *deconflation* are capable of manipulating seeing and knowing as two separable entities. Still, however the schematic form of something coming into present existence whether mentally or physically persists as a shared structure.

I thus take primary metaphors to be a set of conceptual universal, unavoidable and indispensable because of their reoccurrence creating a sort of schemata for our embodied interaction with non-human scale biology. In that respect I understand source to be the physical input and target to be the cognitive (and even neuro-biological) operation that resonate the impressive flow. The dynamics is thus generated in the physical world and meet by the frequencies of human scale biology.

Having said that primary metaphors work as regulating schemas for our bodily interaction with the physical world doesn't mean that they are rigid structures, rather as Johnson says image-schemas are dynamic and malleable so that they can "fit many similar, but different, situations that manifest a recurring underlying structure". This means that the schemata which primary metaphors activates manifest a structural stability that makes it possible for salience to emerge as a result of a specific dynamic pregnance. As a consequence of the dynamic malleability upon a structural stability, primary metaphors are not constitutive functions or operations, but display always a specific conceptualisation of a more generic structure. Primary metaphors thus work by letting us recognize the underlying schematic structure and at the same time displaying instantiations of that schema. Without this structural stability there wouldn't be meaning at all but without non-primary metaphors arising through processes of blending by which pregnance emerges there wouldn't be cultures, literatures, aesthetics etc.

2) Imagination: peak shift effect and aesthetic experience

In the following I will discuss the relation of structural stability and Imagination. I follow the basic claim of W.S. Ramachandran and W. Hirstein in their article on *The Science of Art – A Neurological Theory of Aesthetic Experience* (1999) where they hypothesize that the recognition of *essence*, or *essential features*, notions which I believe is more adequately accounted for by the concepts of structural stability and schematic form, is created by an exaggeration: a skeletal *caricature*. This recognition produces an emotional response: the aesthetic experience which neural underpinning they speculate can be measured by enlarged SCR responses to caricatures (vs. fotos).

But why do we create and find pleasure in art? The Ramachandran answer lies in the evolutionary rationale of art. Instead of viewing art as an accidental side effect of human life, Ramachandran & Hirstein view our imaginative capacities as a primordial survival strategy. They argue that only because it gives us pleasure to recognize *things* as *that thing* our survival is granted for that simple reason that we wouldn't engage in object recognition if it weren't rewarding. The pleasure of art is thus understood as the insurance of our motivation for classifying objects. Recognition of schemas and pleasure are therefore two interwoven aspects of the evolutionary rationale.

They further argue that "what the artist tries to do is not only capture the essence of something but also to amplify it in order to more powerfully activate the same neural mechanisms that would be activated by the original object" (1999: 17). The effect of this activation is supposedly to evoke a direct emotional response, which they define as the aesthetic experience. They furthermore claim that this limbic activation is primarily produced by the psychological phenomenon called the *peak shift effect,* which constitute the aesthetic experience related to the perception of visual art.

Making reference to a set of experiments in animal discrimination which shows that a rat responds even greater to a rectangle that is longer and skinnier than the prototype which it was trained to recognize shows that what the rat is learning is not a prototype but a rule. This finding leads the authors to conclude that the emotional response can be intensified by a super stimulus leading the authors to their first aphorism: *All art is caricature.* By this aphorism the authors point to the amplification of the specificity of the object (amplify the difference to produce a caricature) creating a sort of *super stimulus*. Even though that this aphorism has been highly criticized[1] as well as their interpretation of the phenomena of *peak shift effect*, there is a valuable insight to hang onto; art has the ability to bring out and make recognizable by a sort of transcendence in which the structural stability is preserved. Ramachandran and Hirstein ask the expensive question: "what does it mean to capture the very essence of something in order to evoke a direct emotional response?" (1999:17).

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[1] (See Journal of Consciousness Studies, 6, No. 6-7).

I propose that the very essence is a schematic form of structural stability and that the recognition of this form is pleasurable. It is by Imagination that we are able to recognize, not a wild Imagination but an Imagination that works by a set of constraint or governing principles as proposed in TWWT. Another set of possible governing principles are the "Eight laws of artistic experience" that Ramachandran and Hirstein (1999:15) proposes, here artistic experience corresponds to the principle of Imagination that we deploy with the *overarching goal* of *achieving human scale.*

Having defined the peak shift effect as the recognition of a schematic structure it is now possible to understand the super stimulus as more than just a caricature but as the emergence and salience of the pregnant form by the role of Imagination.

Ramachandran and Hirstein (1999) suggest that the pleasure of recognition is a "basic mechanism that one taps into, whether with puns, poetry, or visual art" (1999:31), but at the same time they consider metaphor in art, thinking solely on visual art, as being the most enigmatic of the 8 universal principles they propose.

They admit that discovering similarities is an essential part of all visual pattern recognition and as such probably rewarding, but they don't take the step fully to suggest an analogy between visual and conceptual pattern recognition, an analogy, as I have said the paradigm of cognitive linguistics takes for granted. According to this analogy there should be no difference but a scale of granularity between visual and conceptual integration; therefore those principles that are rewarding in object formation and recognition are also rewarding in conceptual analogy and metaphor.

3) The Morphodynamics of Love

In this part I will analyse the following three lines from *Soledades*, the most debated work of the Spanish baroque poet Góngora.

> *Virgen tan bella, que hacer podría*
> *Tórrida la Noruega con dos soles*
> *Y blanca la Etïopa con dos manos*
> (Sol. I verse 783-785)

My intentions are to see how Imagination work within structural stability, or how primary and non-primary metaphors, which again corresponds to universal and cultural conceptuals interact and come to play by a process of integration.

My primary concern introducing Imagination as a sort of transcendent principle is off course not to advocate a Non-Embodiment Hypothesis but rather to try to take into account that beside structural stability (image-schemas and primary-metaphors) which has been the greatest concern for Cognitive linguistics, in particular CMT, trying to establish a realistic and yet embodied foundation for the study of metaphors and literary analysis in general, there are ways in which Imagination prompted by structural principles create new emergent meaning somehow transcends basic cognitive schemas. This is the level of literatures, cultures, aesthetics, which all can be analysed in terms of formal and structural stability but also get invested in ways in which pregnance emerges in still new forms that are intrinsic to that specific culture at that given period. What I hope to be able to account for is thus the possibility to demonstrate a way in which we can do literary analysis within the framework of cognitive linguistics, not just

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by running the literary analysis as a checklist of primary metaphors but getting a grasp of how pregnance emerges in cultures as a result of transforming and yet highlighting cognitive schemas. As Fauconnier and Turner suggest (2002) we now enter the Age of Imagination, which of course doesn't mean that we are becoming more imaginative, but that we are closer than ever to understand how the Imagination work creating pregnance through morphogenesis, in F & T terminology *New Emergent Meaning.*

For this reason, I believe that Fauconnier and Turners Conceptual Integration Theory has an advantage over the two-domain Conceptual Metaphor Theory, because it takes into account the notion of emergence as something which is at the same time constrained by a set of governing principle which carries over the structural stability, but also wild because it takes into account the interpretive process by which pregnance gets invested within these formal aspects that prompts our Imagination.

In the present case I study the notion of love in Góngora in order to grasp how this notion emerges as a result both of embodiment and of a striving to transcend this embodiment. Having established limbic activation as a measurement for the aesthetic experience we have good reason to classify Góngora´s poetry as art. The debate among Góngora´s contemporaries can best be characterized by the often-strong emotional responses provoked by his later work. Among his critiques there was a wide distinction between those that defended his poetry and those that rejected it; both sides were equally passionate. While some of the debate between culteranist' and conceptist', as the literary critics has classified them, only has historical interest today, there are some ever lasting aspects concerning the function of poetry that still have relevance today: what are the limits of imagination? As already discussed Fauconnier and Turner

(1999) proposes that *the mechanisms of creativity* works under a set of well defined constrains. Imagination therefore is never truly "wild" because it is governed by a set of cognitive principles as those proposed in TWWT.

This question of the limits of imagination was raised by Góngoras contemporaries a discussion of the notion of *obscureness*. Implicit in this debate was the idea of to which point *imitatio* as a rhetorical principle could be abandoned for the sake of *inventio*. Góngora being the baroque poet *per excellence* was very well educated in the classical tradition, which served him as the template upon which his imagination was employed. There is therefore no sense in which his imagination is wild or obscure, as suggested, rather it is very constrained by the tradition that he grew out of. Rather because the classical tradition was so entrenched and conventionalised by the renaissance he had the possibility of using the tradition as a mere schematic form which he could exaggerate and transform depending on the ability of his contemporaries to recognize even the most exaggerated forms.

Among Góngora's contemporary critics these three above cited lines was the most discussed example of an intolerable exaggeration. And certainly it is a wild exaggeration, not to compare the eyes of this beautiful girl with the sun, because that was already a conventional renaissance metaphor, but to emphasis their radiance by saying that they could burn al of Norway. Although some critics were willing to follow him on this hyperbole, nobody accepted the expression of the hands so abundantly white that they could make all of Ethiopia white. Looking at this example we get a glimpse of how the peak shift effect can be created in poetry by the hyperbole creating a sort of a conceptual caricature or a "super stimulus".

In the following analysis I will show how a set of entrenched primary metaphors get activated and elaborated in the baroque conceptualisation of The Power of Love.

In the passage we see four interacting dynamic conceptualisations of Love

a) heat
b) light
c) space
d) time

Lakoff and Turner (1989:87) proposes that poetic reading requires a formation of composite metaphorical systems establishing coherence among what they then called basic metaphors and I refer to as primary metaphors, in order to build more complex conceptualisations, what I have referred to as non-primary or cultural metaphors. As Grady (1997) suggests this elaboration of complex metaphorical systems occurs through a process of blending in which primary metaphors are the inputs to integrated conceptualisations generating non-primary metaphors. Blending as such is thus not a phenomenon *per se* but a cognitive operation by which we handle conflicting or at least diverse conceptualisations to form complex and coherent units of meaning.

Lakoff and Turner point out three very basic metaphors by which we conceptualise life:

A) LIFE IS LIGHT
B) LIFE IS HEAT
C) LIFE IS A CYCLE

These three metaphors constitute what they call a composite metaphor: LIFE IS A CYCLE OF THE WAXING AND WANING OF LIGHT AND HEAT. They are all primary metaphors in the sense that they display a correlated schema of our experience of how the coming and going of light and heat correlates to day and night, activity and inactivity and ultimately life and death. This is thus a schema grounded in experience by which we conceptualise the dynamic forces (heat and light) that structures existence and also Love.

In the passage we see how heat and light are two interwoven conceptualisation. We are presented with a set of geographical places; Norway and Ethiopia and body parts; eyes and hands that are mapped onto these dynamic properties of heat and light. This is an example of how to achieve human scale by compression: the dynamic of fire which we use to conceptualise Love is here compressed to hand and eyes.

The cultivated reader at Góngora's time immediately activates two conventional blended renaissance conceptualisations: Eyes are Suns and Love is Fire, which come to form an integrated conceptualisation in which the gaze of the fair lady can lighten you up and thereby provide life but also darken your soul destroying it by the intensity of the passion. This complex conceptualisation is thus already there for Góngora to further elaborate and no renaissance reader would therefore react on the implications of the power of love conceived as both nurturance and destruction, what they reacted to was the exaggeration of these dynamic properties.

In the first line we have the eyes of the virgin parching Norway by drying out all the wetness by the power of the radiance of her gaze. We thus not only have the renaissance reading of the eyes of the beloved setting the hart on fire but the full blown dynamic properties of extreme intensity of heat causing a transformation of state of affairs so that Norway conventionally conceptualised as cold and humid becomes ardent. Implicit in the transformation is also that the white snow of Norway melts and the earth dries out provoking a change from white to dark.

In this first line we thus have a reading in which the virgin-bride by the heat and light of her gaze transforms coldness into heat; that is the dynamic properties of heat and light burns out the humid fertility of Norway. In the next line we will se how the same dynamic properties are capable of the opposite transformation as well. In this line it is the radiance of her hands that whitens Ethiopia. Her hands borrow, so to speak, the radiance of the eyes (notice the symmetry: two eyes – two hands) to perform the opposite transformation in which the "hottest" and darkest place on earth cools down and becomes white by the transmission of light from the virgins hand.

We thus have two opposite transformations by the same dynamic properties of light and heat. In the first network we have a mapping from heat and life to destruction and in the second we have a mapping from heat and life to fertility. Only a complex figure as the virgin-bride is capable of provoking such opposite transformations. The passion of first love is on the one side so strong that it burns out the soil destroying fertility. Passion is thus conceptualised as being a dark destructive force. On the other side is the same passion capable of giving light and nurturance to a burned and death soil. Passion is thus also conceptualised as being a bright and life giving force. Because she is a virgin-bride she represents both conceptualisations of passion; the dark destructive passion and the light life giving passion – therefore her Power of Love represented as dynamic forces of light and heat can perform both transformation: cause both life and death. This she does by a complete transformation in which what conventionally is conceived as cold and white becomes hot and dark and what conventionally is conceived as hot and cold becomes white and cool.

The colour scale is of course invested culturally in these lines in which white is correlated with innocence and dark with sin. The darkest and "hottest" place on earth can this virgin whiten (purify) and cool down with the innocence of her virginity. Góngora uses thereby the colour scale to emphasis the emotional responses to infertility and fertility. Ethiopia as a black country is mapped to passion and Norway as a white country is mapped to innocence.

Colours have always been the "problem" so to speak for metaphor theory because it is difficult to make a claim of colours in terms of embodiment. Yet there are research in cognitive psychology which shows that colours within a single literary conceptualisation of Love will manifest structural stability so that for the vast majority of readers when asked to choose a matching colour chip corresponding to the colour terms in certain passages of the book would make similar choices (C. Cacchiari: unpublished manuscript read at the Euresco Conference, april 2002: *Mind, Metaphor and Language*).

These scenarios of destruction and life is conceptualized as a yet unfulfilled event expressed by the conditional "hacer podría" that will only come through under certain conditions of which we have two possible scenarios. Either the power of the virgin is restricted to her virginity in which case she would loose the Power of Love by loss of virginity or the Power of Love can only manifest it self by loss of virginity. The first reading would be the more traditional baroque *Carpe Diem* reading in which the decline of life is already implicit or generated in the very blossom in which death is already present in the moment when the beauty of youth reaches its peaks.

The other reading which I suggest renders another baroque theme: the idea of transformation suggests that only under the conditions of loss of virginity can the Power of Love be expressed. This reading points to a central claim that any aesthetic object is a result of two dynamic interacting forces: structural stability and Imagination, understood as basic cognitive schemas on one hand and on the other governing principles for transcending these while at the same time carrying over the structural stability creating the joy of re-cognition by the emotive function of aesthetics.

The other reading which I suggest renders another baroque theme: the idea of transformation which indicate that only under the conditions of loss of virginity can the Power of Love be expressed, because only then can a true morphogenesis happen. This reading points to a central claim of my paper saying that any aesthetic object is a result of two dynamic interacting forces: structural stability and Imagination, understood as basic cognitive schemas on one hand and on the other governing principles for transcending these while at the same time carrying over the structural stability creating the joy of re-cognition by the emotive function of aesthetics. This is however just a very preliminary step into the research still needed to be done in order to get a better grasp on how Emotions are connected with Imagination.

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Experimental evidence in support of a Cognitive Linguistics analysis of the Spanish verbs Ser and Estar

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Extended abstract

The copula system SER/ESTAR is arguably the oldest problem in Spanish Grammar. Though many analyses have been proposed, most have shared two important assumptions. The first is that we have access to an objective reality, largely unmediated by subjective experience. The second is that the verbs comprise a copula system which performs complementary functions. Common qualifications of these functions have included the marking of attributes as either imperfective/perfective, innate/non-innate or permananent/temporary, amongst others. The sentence 'Angélica es estudiante' /Angelica is a student/ contains SER, the copula assumed to mark permanence, imperfectivity or innateness. Given the normally temporary status of studenthood, ESTAR should be used to mark the attribute. That the sentence contains SER is evidence that much is still unaccounted for. We have chosen, therefore, to disregard these assumptions in favor of the embodiment hypothesis as supported by Cognitive Linguistics (CL) Theory.

A basic tenet of Cognitive Linguistics is that one of the primary sources of meaning is our direct, physical interaction with the environment. Tools such as metaphor and blending allow us to use these embodied interactions to build the conceptual abstractions which we then use to understand the world we live in at every level, from the purely physical to the social. Reality is thus metaphorically constructed, and therefore perspectival. SER and ESTAR provide the ideal situation against which to empirically test this hypothesis. Our goal is therefore, two-fold:

- to use the ideal situation presented by SER and ESTAR to empirically test the embodiment hypothesis
- to elucidate the cognitive, embodied architectures of the verbs as a means to a sound analysis of their behavior

We predicted that SER marks intrinsic properties associated with a reality as constructed by the speaker. Sera, Bales and Castillo Pintado (1997) have produced initial evidence to this effect. Their work showed that Spanish-speaking children using SER were better at telling the difference between real and apparent qualities than English-speaking children were using "to be."

We predicted that ESTAR is a space-builder prompting metaphoric blends from one conceptual space onto another, an idea also supported by Delbecque (1997). ESTAR is originally a locative stemming from the Latin 'stare' meaning /to stand/. The sentence 'Elisa está triste' expresses that ESTAR has been used to build the metaphoric space of sadness Elisa finds herself in. This is consistent with Scandinavian languages such as Danish, where the verb 'stå' /to stand/, shares the same etymological origin as ESTAR, and is also used in locative metaphoric extension. The English sentence 'The food is on the table' is 'Maden står på bordet' /the food stands on the table/ in Danish and 'la comida está en la mesa' which could be transliterated in Spanish as /the food stands on the table/.

In our experiment we had subjects match a spoken sentence with the best of several image schemas. These were designed so that some contained one of two marked spatial qualities: displays containing tightly grouped stars made location conspicuous; a wrinkled moon against a wrinkled background made evident an object subsumed by the 'space' it was in. The remaining image-schemas were non-spatially-qualified, i.e. evenly dispersed stars; a lone wrinkled moon. Results supported our hypotheses that ESTAR would be significantly sensitive to both types of spatially qualified image-schemas while SER would only show sensitivity to image-schemas showing objects in isolation. We interpret these results as evidence of the spatial/locative underpinnings in ESTAR's architecture. Though further work is required, results also suggest that SER's architecture is not necessarily complementary to that of ESTAR, and that it may in fact be marking attributes as categorically related to the entity in question.

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The man, the key, or the car: Who or what is parked out back?

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Abstract

Nunberg (1995) has identified two types of metonymic constructions with different linguistic properties: predicate transfer and deferred indexical reference. In this paper, we describe these types of metonymies within the context of cognitive grammar (Langacker, 1999), mental space theory (Fauconnier, 1994), and blending theory (Fauconnier & Turner, 2002). Using concepts from cognitive grammar, we show how principles of cognitive salience and mental access explain the different types of metonymic relations. We argue that different types of mental access produce different types of integration in blended spaces.

It is quite common in everyday language to hear sentences like (1)"I am parked out back" or (2)"He has a Picasso in his den". We can also easily imagine a situation where a waitress, speaking about a customer, says: (3)"The ham sandwich is at table 7" or a situation where a customer hands his key to an attendant at a parking lot and says: (4)"This is parked out back". All these expressions, (1)-(4), employ the mechanism of metonymy.

Below we briefly review the treatment of metonymy in cognitive linguistics, contrasting it with the more referential treatment given by Nunberg (1995). Adapting *conceptual integration or conceptual blending theory* (Fauconnier and Turner: 1996, 1998, 2002; Turner and Fauconnier, 1999), we suggest that metonymy involves conceptual blending between the concept evoked by the *trigger* term (such as "Picasso" in (2)), and that evoked by the intended *target* (the particular piece of art referred to in the den in (2)). Following Langacker (1999), we suggest that metonymy is a *reference point construction* and note that certain kinds of metonymies rely more heavily on context for their efficacy, and that this context-dependence is marked by definitive linguistic properties, and may affect the extent of trigger-target blending that occurs in a given metonymic expression.

1. Metononymy as a referential phenomenon

Though recognized as an important phenomenon, metonymy has typically taken a back seat, so to speak, to her big sister metaphor. While the cognitive import of metaphor has long been appreciated (Lakoff & Johnson, 1980), metonymy has typically been viewed chiefly as a referential phenomenon in which one entity is used in order to refer to another entity. Lakoff & Turner (1989), for example, underline that in metaphor a whole schematic structure – the source domain – is mapped onto another, the target domain. Metonymy, on the other hand, involves only one conceptual domain (mapping occurs within a single domain, not across domains) and is used primarily for reference. "Via metonymy, one can refer to one entity in a schema by referring to another entity in the same schema" (Lakoff & Turner, 1989: 103).

This point can be illustrated by Lakoff & Johnson's (1980) examples repeated here in (5) and (6).

(5) Inflation robbed me of my savings.

(6)The ham sandwich is waiting for his check.

Although the metaphoric use of *inflation* in (5) involves the attribution of human qualities to an abstract entity, it does not involve reference to a person. In contrast, Lakoff & Johnson suggest that *ham sandwich* in (6) actually refers to the person who ordered the ham sandwich, but does not involve the attribution of human qualities to the sandwich. For Lakoff & Johnson, then, the defining characteristic of metonymy is referential, as metonymy fundamentally involves the use of one entity to refer to another, related entity.

Even though Lakoff & Johnson conceive of metaphor as having primarily a function of understanding (a way of conceiving of one thing in terms of another) and metonymy as having primarily a referential function (it allows us to use one entity to stand for another), they also point out that metonymy is not merely a referential device, but provides understanding (Lakoff & Johnson, 1980: 36). To explain their position, they provide very insightful analysis of some examples of metonymy:

> Metonymic concepts allow us to conceptualize one thing by means of its relation to something else. When we think of *a Picasso*, we are not just thinking of a work of art alone, in and of itself. We think of it in terms of its relation to the artist, that is, his conception of art, his technique, his role in art history, etc. We act with reverence toward *a Picasso*, even a sketch he made as a teen-ager, because of its relation to the artist. This is a way in which the PRODUCER FOR PRODUCT metonymy affects both our thought and our action. Similarly, when a waitress says "The ham sandwich wants his check," she is not interested in the person as a person but only as a customer, which is why the use of such a sentence is dehumanizing. Nixon himself may not have dropped the bombs on Hanoi, but via the CONTROLLER FOR CONTROLLED metonymy we not only say "Nixon bombed Hanoi" but also think of him as doing the bombing and hold him responsible for it. Again this is possible because of the nature of the metonymic relationship in the CONTROLLER FOR CONTROLLED metonymy,

> where responsibility is what is focused on (Lakoff & Johnson, 1980: 39).

We quoted this passage at length since it highlights the emergence of new meaning that metonymical expression produce. However, even though Lakoff & Johnson, by looking at specific examples, acknowledge that the function of metonymy is not only referential, their model, since based on the mappings between two domains, cannot adequately explain this phenomenon. We believe that conceptual dimensions of metonymy is best captured by conceptual integration or blending theory.

2. Picasso, Nixon and emergent meaning

Conceptual integration operates over mental spaces as inputs and makes use of a four-space model. These spaces include two input spaces plus a generic space, representing conceptual structure that is shared by both inputs, and the blended space, where material from the inputs combines and interacts. The blend inherits partial structure from the input spaces, and has emergent structure of its own through processes of pattern completion and elaboration, a form of mental simulation. Blending is an on-line, real-time process that creates new meaning through the juxtaposition of familiar material. Inferences, arguments, and ideas developed in the blend can lead us to modify the initial inputs and to change our view of the corresponding situations.

Blending theory suggests metonymy is more than a referential phenomenon, but rather a creative mechanism for meaning construction that can provide novel insights into the discourse situation. Consider the three metonymic expressions (7)-(9) from the previous quote (Lakoff & Johnson's, ibid.).

(7) The ham sandwich wants his check.

(8) He's got a Picasso in his den.

(9) Nixon bombed Hanoi.

The conceptual integration network to represent (8) involves two input spaces: a Pablo Picasso space, and a Picasso's art space. In each mental space there are elements that represent each of the discourse entities. In the Pablo Picasso space, an element is set up to represent "Picasso as artist". Furthermore, this element can be connected to various sub-elements in background knowledge, like Picasso's conception of art, his technique, his role in art history, etc. In the Picasso's art space, there is an element that represents the particular work of art referred to in (8). The network is further built by the establishment of particular mappings between cognitive models in different spaces: there is a mapping between Picasso as artist from the mental space of Pablo Picasso and the element that represents the work of art in the mental space of Picasso's art. This particular mapping produces the metonymic relationship where producer is connected with its product and licenses the metonymic reference through the producer to the product.

However, in order to explain the complete meaning of the expression in (8), we have to refer to the third mental space, the blended space, in which elements from the inputs are combined to yield emergent structure (Figure 1). The elements from both spaces are selectively projected to the blended space. Even though there might be other elements in the input spaces, such as Picasso as member of Communist party in the Pablo Picasso's mental space or *Guernica* in the Picasso's art space, those elements are not projected to the blended space. The emergent meaning, built through the amalgam of Picasso's conception of art, his technique, his role in art history (derived from the element Picasso as artist in the input space 1) and the work of art (projected from the input space 2), produces the idea of importance of this particular work of art through its relationship to the artist. So the meaning of "a Picasso" in (8) is not just its referent – the work of art in and of itself as in the second input – but the conception of the work of art in terms of the artist. The cause (the artist) and the effect (the work of art) have been compressed in the blend so that our reaction to the piece is intimately intertwined with our reverence for the artist.

The metonymy in (9) can be analyzed in very similar fashion. In this expression, we have Nixon as input space 1 and US Air Force as input space 2. Nixon as US president from the input space 1 is connected with the US Air Force in the input space 2. The blended space allows us to say that not only did the US Air Force bomb Hanoi, but that Nixon was personally responsible for it. At the same time, because this is a metonymy, we are not fooled into inferring that Nixon himself dropped the bombs on Hanoi – even though we are dealing with a compressed item, we can decompress it and retrieve the initial inputs to the blend. In this case, the metonymy provides us with a compression at human scale: while we have a hard time understanding how to attribute responsibility to a corporate entity such as the U.S. Air Force, responsibility frames attach readily to individuals. To account for this amalgam of meaning, constructed with selected elements from two mental spaces, we necessarily need a model with an additional mental space that contains emergent structure of its own.

Analysis of metonymy in blending theory thus echoes recent research in metonymy that suggests the inadequacy of viewing metonymy strictly as a referential phenomenon (Panther & Radden, 1999; Barcelona, 2000). Metonymy cannot be explained only in terms of referential function, since its mechanism allows us to do more than just use on entity to stand for another. The question that we face now is one pertaining to the generalizability of the model. Do all metonymies function according to the same principles? (What about the expressions in our initial examples (3) and (4) – do they follow the principles that govern examples (1) and (2)?) And, if not, is the blending model applicable to all types of metonymies? In order to start answering those questions, we will first briefly review Geoffrey Nunberg's distinction between different types of metonymies.

3. Deferred indexical reference vs. predicate transfer (and occurrent metonymy)

Nunberg (1995) describes metonymy as a "transfer of meaning," defined as an "ensemble of productive linguistic processes that enable us to use the same expression to refer to what are intuitively distinct sorts or categories of things" (Nunberg, 1995:1). In his opinion, transfer cannot be adequately explained in terms of the conceptual relationship that metonymy exploits: transfers are linguistic processes. In order to stress the difference between rhetorical figures (such as metonymy) and the linguistic mechanisms (such as transfer of meaning), Nunberg distinguishes between two different kinds of transfer: *deferred ostension* or *deferred indexical reference* and *predicate transfer*. To comprehend the difference between these two kinds of transfers, consider again the situation in which a customer hands his key to an attendant at a parking lot and says either (1) or (4).

(1) I am parked out back.

(4) This is parked out back.

According to Nunberg, (1) and (4) exploit the same metonymic conceptual relations, but are governed by two different linguistic mechanisms. Nunberg suggests that (1) is a case of *predicate transfer*, while (4) is a phenomenon he calls *deferred indexical reference*. The chief difference between these two sorts of metonymies is that in predicate transfer, the subject of the sentence refers to the stated NP, or *trigger*, ("I" in (1)); while in deferred indexical reference, the subject of the sentence refers to the *target*, or intended referent (the car). As evidence for his claim, Nunberg notes that the two sorts of metonymies also differ with respect to other linguistic properties in a way that suggests a closer (linguistic) alignment of predicate transfer metonymies with the metonymic trigger term, and deferred indexical reference with the intended target. Referential differences are thus manifested by a number of grammatical differences, including the gender marking of the metonymic term's modifiers, the sorts of predicates that can be conjoined, and the possibility of replacing the metonymic term with a definite description.

For example, in languages that mark words for grammatical gender, gender marking is appropriate for the trigger in predicate transfer metonymies, and for the target in deferred indexical reference. Thus in an Italian translation of (1), a male speaker can say "*Io sono parcheggiato dietro.*" In this sentence the word *parcheggiato*, (parked), is a masculine adjective appropriate for the subject of the sentence (male speaker), even though the Italian word for car (*la macchina*) is feminine. In contrast, with deferred indexical reference, the gender marking on the predicate is appropriate for the target referent. In Italian, a customer holding up a key and referring to his truck can say: "*Questo è parcheggiato in dietro*". Even though, the Italian word for key (*la chiave*) is feminine, the adjective is masculine (*parcheggiato* vs. **parcheggiata*) because it is appropriate for the word truck (*il camion*), which is masculine.

Similarly, with predicate transfer, we can conjoin another predicate that describes the trigger, as in (11), but not always one that describes the target, as in (12).

(11) I am parked out back and have been waiting for 15 minutes.

(12) *I am parked out back and may not start.

By contrast, in deferred indexical reference, we can conjoin another predicate that describes the car, as in (13), but not the key, as in (14).

(13) This is parked out back and may not start.

(14) ??This fits only the left front door and is parked out back.

Similarly, the metonymic NP can be replaced with a description of the trigger in predicate transfer in (15), but not in the deferred indexical reference in (16).

(15) The man with the cigar is parked out back.

(16) *The key I'm holding is parked out back.

Nunberg also discusses *occurrent metonymies*, as in (3) and the very similar case in (7), in which metonymic reference is possible only in a restricted range of situations. For example, *ham sandwich* is a useful identifier in the context of the restaurant, but not outside of it. Although he notes that occurrent metonymy depends on the availability of specialized context, Nunberg includes occurrent metonymy in the category of predicate transfer.

However, linguistically, occurrent metonymies behave more like deferred indexical reference than predicate transfer. As in indexical reference, in occurrent metonymies gender is appropriate for the target referent, not the trigger. For example, if the client who ordered a ham sandwich is a woman, we can say in Italian:

(17) Il panino al prosciutto se ne andata/*andato senza pagare.

In this example, even though the word for sandwich is masculine, *il panino*, the predicate is feminine, agreeing with the target. Further, as in deferred indexical reference, occurrent metonymies conjoin with other predicates that apply to the target (as in (18)), but not the trigger (as in (19)).

(18) The ham sandwich wants his check and is really getting annoyed.

(19) *The ham sandwich wants his check and has too much mustard on it.

But, like predicate transfer, the metonym in an occurrent metonymy can be replaced with an alternative description of the trigger. For example, if the ham sandwich is referred to on the menu as *The Porky Special*, one could substitute "*The Porky Special*" for "The ham sandwich" in (3) and (7). Occurrent metonymies can thus be seen as differing somewhat from both cases of deferred indexical reference and from predicate transfer.

In summary, Nunberg's analysis highlights three different types of metonymies: deferred indexical reference, predicate transfer, and occurrent metonymies. However, Nunberg argues that the description of the mechanisms of transfers of meaning is fundamentally a *linguistic* problem and that the difference between these examples does not depend on the kind of relations these examples exploit. In all the cases there are correspondences between the things in one domain (cars, trucks, sandwiches, etc.) and the things in another domain (keys, drivers, restaurant customers, etc.). According to Nunberg, conceptual analysis cannot provide any adequate explanation of these phenomena.

> …unlike rhetorical classifications like metaphor and metonymy, the various mechanisms of transfer can't be distinguished simply by pointing at the types of correspondences they exploit. And, for this reason, the description of these mechanisms is fundamentally a linguistic problem, rather than a problem of conceptual analysis. That is, there is nothing we can learn about keys, drivers, or cars that will help us to explain the differences between examples like (1) ["This is parked out back,"] and (2) ["I am parked out back,"] (Nunberg, 1995: 3).

Below we consider whether the linguistic differences Nunberg illustrates mark conceptual differences in meaning evoked by various sorts of metonymic expressions.

4. Cognitive reference points

We believe that one difference between Nunberg's different cases of metonymy is motivated by cognitive principles of *relative salience*. Cognitively salient items can be defined as *cognitive reference points* (Langacker, 1991). The basic idea is that central highly prominent items act as cognitive reference points to evoke other less salient ones. A conceptualizer (the speaker or addressees) enters into mental contact with an entity against the background provided by other elements in the conception. The reference point is an element which is prominent in the discourse and consequently sets up the contexts within which the conceptualizer can enter in the contact with other less prominent entities in the discourse. These entities can be said to be in the dominion of the reference point and their construal depends on their association with the reference point.

Moreover, Langacker argues that metonymy is basically a reference point phenomenon (1999). The entity that is normally designated by a metonymic expression serves as a reference point affording mental access to the desired target (i.e. the entity actually being referred to), and directing the addressee's attention to it. For example, in the predicate transfer metonymy in (1), the owner of the car plays the role of the reference point, while in the deferred reference metonymy (4), the keys are the reference point. In both examples, the target of attention is the car. We mentally access the car through either the owner in (1), or the key in (4). The owner and the car, by being sufficiently salient, can direct our attention towards the intended target and hence play the role of cognitive reference points.

Among the factors that can make an entity suitable to serve as a metonymic reference point are certain *principles of cognitive salience*. For example, human entities are more salient than nonhuman (20), wholes are more salient than parts (21), concrete entities are more salient than abstract ones (22), and visible entities are more salient than nonvisible ones (23) (Langacker, 1999: 199).

(20) Schwartzkopf defeated Iraq.

(21) The car needs washing.

(22) Having one's hands on something (for controlling something)

(23) Save one's skin (for save one's life).

(Radden & Kovecses: 1999)

Consequently, we suggest that the difference between examples (1) and (4), can be better understood by adapting Langacker's proposal of reference point phenomenon. While in the case of predicate transfer we are following principles of cognitive salience where reference point is a human being (the owner) which is more salient than non-human entities (the car), in the case of deferred indexical reference, and in the case of the occurrent metonymy, we do not. Rather, the latter cases of metonymy involve what Langacker calls a *skewed salience relationship*, in which specific circumstances induce the skewing of salience relationships. In cases of deferred indexical reference, the salience of items in the immediate context can override the default hierarchy that obtains under neutral conditions. In (1), for example, we might consider the car to be more salient than its key outside of a particular context. However, in this specific circumstance, the key, because of its immediate presence, assumes a more salient role that enables it to serve as the reference point for the metonymic expression. Similarly, occurrent metonymies are effective precisely because of the particularized salience relationships in the context. For example, in a restaurant setting, waiters usually know almost nothing about the restaurant clients, except for the food they ordered. Consequently, when they have to mention a particular client, the food ordered suggests itself as an obvious reference point.

The principles of cognitive salience point to the fact that the way in which we build metonymical expression is not arbitrary, but linked to the way in which we perceive and conceptualize the world[2]. While examples of predicate transfer follow the principles of cognitive

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[1] The other point that highlights the fact that the metonymical expressions are not arbitrary is the systematicity of such concepts. Metonymies should not be conceived as isolated instances. The idea that the specific examples of metonymies are instances of certain general metonymic concepts in terms of which we organize our thoughts and action has been pointed out by Lakoff and Johnson, 1980 and Radden & Kovecses, 1999, among others.

salience, occurent metonymies and indexical reference do not. However, they are constrained by specific circumstances. For, example, the metonymy in (4) is constrained by the fact that we cannot just arbitrarily substitute keys from this example with any other part of the car, such as the carbeurator. But, in different circumstances, such as with a mechanic in the garage, we might be able to point to the carbeurator in order to refer to the car it belongs to.

This is linked to the further point that, semantically, in the context of the example (1), the function of the key isn't simply a referential one. Consider (4) in the sense of its paraphrase:

(24) The car is parked out back.

Both (4 and 24) describe the same type of situation and have the same truth conditions. Yet their interpretations are not quite the same. In (4) what is conveyed is not only that the car is in some location, but that the key is of particular importance for the action of the parking lot attendant (for similar discussion of the sentence "I am bugged" vs. "The place I am staying is bugged" see Warren, 1999). In addition to serving as a pointer to the car, the key is brought to the attention of the parking attendant in order to highlight the action that the parking lot attendant needs to perform: unlock the car, start it, and drive it to the entrance. Hence the owner is speaking not only about the car, nor only about the key, but about both of those entities as relevant for that particular situation and for the actions that need to be performed.

This difference in meaning between sentence (4) and (24), where (24) is characterized by additional emergent meaning, indicates that an adequate analysis of deferred indexical reference metonymies requires a conceptual integration network that contains a blended space. As already stated, we believe that the existence of this emergent meaning is pivotal for the explanation of the way in which metonymy functions and should be analyzed by referring to the theory of conceptual integration.

5. Blending and predicate transfer

In the initial parts of the text, we analyzed Lakoff & Johnson's examples (8) and (9) in terms of conceptual blending. The emergent meaning that these examples present can be accounted for in terms of blending theory. After the illustration of Langacker's proposal of conceiving metonymy as a reference point phenomenon, we see that the metonymies from (8) and (9) both follow Langacker's principle of cognitive salience - human entities are more salient than nonhuman. A conceptualizer enters mentally into contact with Picasso/Nixon against the background provided by other elements in the conception - Picasso's art/US Air Force space. Picasso as artist/Nixon as US president are prominent within the discourse and so serve to set up the contexts within which the conceptualizer can enter in the contact with other entities less prominent in the discourse - a particular piece of Picasso's art work/specific members of US Air Force directly involved in bombing Hanoi. The construal of the entities referred to depends on their association with the reference point entity (Picasso as artist/Nixon as US president). This construal of new meaning is relative to the conceptual processing in the blended space.

Because these metonymies (8 and 9) follow the principle of cognitive salience - human entities are more salient than nonhuman - they belong to Nunberg's category of predicate transfer. Thus, their conceptual integration networks are very similar to the conceptual integration network built for sentence (1) (Figure 2). The blended space for example (1) contains selected aspects of structure from each input space: a man (say Mr. McDowell) as the owner of the car from the input space 1 and a car (say a black Mercedes) from input space 2. The emergent meaning in the blended space provides the construal of the black Mercedes as the car that Mr. McDowell owns and the construal of Mr. McDowell as the owner of the car.

The new structure present in the blended space can influence the original inputs in many interesting ways. For example, our culture does not lack stereotypes where owners of cars are conceived with respect to their cars; and the properties of the car, such as being powerful or sporty, are often attributed to its owner. It is also quite common to speak of cars as animate beings, as when we speak of two cars as "racing," or refer to a car on the highway as being "aggressive."

Because the blended space provides such a strong compression between the owner and the car, we are able to produce many fantastic conceptualizations whose entrenchment renders them virtually invisible. For example, an owner of a car involved in an accident can say:

(25) I was hit in the fender.

In fact, he can assert the same utterance in a situation where he wasn't the one driving his car or he wasn't even present at the time of accident. In this case the conceptualizing is not in terms of mappings between the owner's body and the car; what we are dealing here with is something quite strange like one distributed entity which blends together the owner and the car. This new entity lives only in the blend and has properties which can occasionally contradict the initial input spaces. Similarly, we can imagine somebody saying:

(26) I need to walk to where I am parked.

In this case we are dealing with an entity present in two different spatial locations at the same time. This is possible because the first and the second "I" in the sentence are not identical: the same lexical item is used to refer to different mental spaces. The first "I" is the "I" from the input space, while the second "I" is the "I" from the blended space that contains emergent structure on its own (the "carman"). This second "I" does not refer only to the speaker, as its standard definition states, but acquires new emergent meaning and has no well defined entity in the world to which it refers.

In the “carman” blend, the blended space can draw more heavily from the car input space (input 2), like in (25), or from the human input space (input 1,) like in (26), where one can say, when observing two cars chasing each other on the highway:

(27) That red Mercedes seems to be angry at that old Toyota.

Again, in this case we are not necessarily attributing human entities to a car as we were not attributing car’s properties to a man in (26), but we are speaking about a hybrid carman entity. In a similar way we can also imagine a situation where we in just one sentence switch from the conceptualization where the blended space draws more heavily from the human input to a conceptualization that draws predominantly from the car input, as in (28a):

(28a) Look, that red Mercedes is so aggressive that's probably why its fender is dented.

A variation of this sentence is exemplified in (28b), where by substituting the pronoun "its" with the pronoun "his" the switch from drawing heavily from the input space 1 (human) to drawing heavily from the input space 2 (car) is no longer present:

(28b) Look, that red Mercedes is so aggressive that's probably why his fender is dented.

The fact that the blended space includes partial structure from each of the inputs as well as emergent structure of its own is well illustrated in Coulson & Oakley (submitted) “Coke” metonymy example. Coulson & Oakley have provided a blending analysis of the expression "Coke flows past forecasts: soft drink company posts gains", where the predication "flows past forecasts" is an appropriate metaphoric predication for the Coca Cola corporation's profit and, at the same time, an appropriate literal predication for the signature product of that corporation. Hence, the metonymy produces an emergent meaning in the blended space where "Coke" is construed simultaneously as a corporation and as the soft drink that corporation produces.

All this and similar cognitive acrobatics are possible because of the structure built in the blended space.

6. Disposable blends

What about example (3&7)? Lakoff & Johnson (1980) point out its similarity with other examples of metonymy: this metonymy, by accessing the person through the ham sandwich, construes that person as a customer who ordered the ham sandwich. The conceptual integration network contains a person input space and the ham sandwich input space; the blended space contains the restaurant customer who ordered a ham sandwich. However, as examples (17)-(19) show, this expression of occurrent metonymy behaves a lot like indexical reference (although they are not completely identical). Occurrent metonymy and indexical reference work by skewing principles of cognitive salience: in both (4) and (3&7) a conceptualizer is mentally accessing cognitively less salient elements through cognitively more salient elements. This condition is reflected at the linguistic level where language marks the fact that the predicate does not agree with the trigger NP, but rather its intended target. How can a conceptual integration network account for this phenomenon?

It might be tempting to propose that in the case of occurrent metonymies and indexical reference there is no need to postulate a third blended space: the explanation for these metonymies can be given in terms of mappings between input spaces. In (3&7) the expression "ham sandwich" is used to refer to the restaurant customer who ordered a ham sandwich, and in (2) the expression "keys" is used to direct our attention towards the car. This proposal is consistent with the fact that the occurrent metonymy and deferred indexical reference tend not to get entrenched in the language. It seems as if they do not build a mental space that can then be extended to other circumstances.

However, as previously discussed, in (4) the trigger NP (the key) not only points to the car, but also alerts the parking attendant to the action he needs to perform. Similarly, the trigger NP of (17) (the ham sandwich) is not only used to refer to a particular person, but for the restaurant waiter, it construes that person as a customer who ordered the ham sandwich. It is this additional construal that suggests the need for a blended space in which such emergent structure might arise. Then how are these cases distinct from predicate transfer?

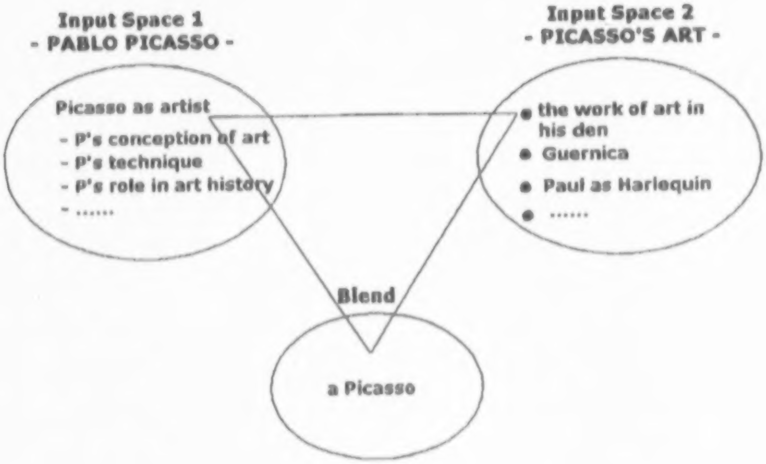
One thing that distinguishes indexical reference and occurrent metonymies from predicate transfer is the fact that they are very dependent on the particular situation of utterance. In order to understand these kinds of expression we either have to participate in the particular situation in which they arise, or be able to mentally conceptualize the scenario and assume the point of view of the speaker. Occurrent metonymies reflect the fact that situational factors affect the focus of our attention, as well as our ability to modify our linguistic expressions accordingly. For example, a waitress will usually refer to somebody in terms of what they ordered while in the restaurant setting (Figure 3), but will not refer in those terms to the person in some other setting (as agreed by Nunberg). Similarly, other clients in the restaurant will not speak of people in terms of what they ordered since those properties result as salient to them. For example, two women will probably not refer to the man who is sitting at the next table as "ham sandwich", but rather as "pink shirt" or "pony tail".

Similarly, the deictic nature of deferred indexical reference metonymies rely heavily on the representation of the immediate context (Figure 4) (referred to as "Base Space" by Per Aage Brandt). Thus the same context-dependence that allows the principles of cognitive salience to be overruled in deferred indexical reference and occurrent metonymies is what makes linguistic entrenchment unlikely. Hence, we can refer to them as "disposable": very effective for the ongoing situation and action, but not usable out of that particular context.

Conclusion

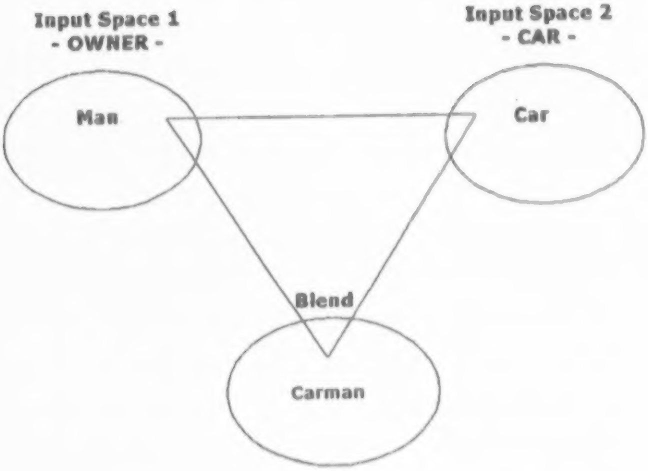
In sum, we have argued against the referential view of metonymy, suggesting instead that metonymic language requires conceptual integration networks for meaning construction to unfold. Following Langacker, we claim that rather than using one term to *refer* to another, metonymy is a reference point construction that involves the use of one term to make mental contact with another. Moreover, we suggest that the three sorts of metonymies catalogued by Nunberg can be arrayed on a continuum of context-dependence that affects both the generalizability of the metonymic trigger term as an effective reference point for the target, as well as the degree of blending between the trigger and the target. Predicate transfer metonymies obey Langacker's salience principles, and thus can be extended beyond the immediate context. In contrast, because indexicals and occurrent metonymies both rely on contextual factors for their salience, they are not as generalizable.

Finally, we propose that the different linguistic properties of predicate transfer, deferred indexical reference, and occurrent metonymies mark varying degrees of fusion in the blend. Deferred indexical reference involves almost no blending of the trigger and the target, and is reflected in the fact that the linguistic properties of these terms are appropriate for the target term. Predicate transfer involves extensive blending of the trigger and the target such that linguistic properties of the trigger term dominate. Occurrent metonymies, whose context-dependence is intermediate between predicate transfer and deferred indexical reference metonymies, involve an intermediate amount of trigger-target blending whose presence is manifested by linguistic properties somewhat intermediate between the trigger-heavy predicate transfer and the target-heavy deferred indexical reference.


Input Space 1
- PABLO PICASSO -
Picasso as artist
- P's conception of art
- P's technique
- P's role in art history
- ......
Input Space 2
- PICASSO'S ART -
the work of art in his den
Guernica
Paul as Harlequin
......
Blend
a Picasso

"He has a Picasso in his den"

Figure 1


Input Space 1
- OWNER -
Man
Input Space 2
- CAR -
Car
Blend
Carman

"I am parked out back"

Figure 2

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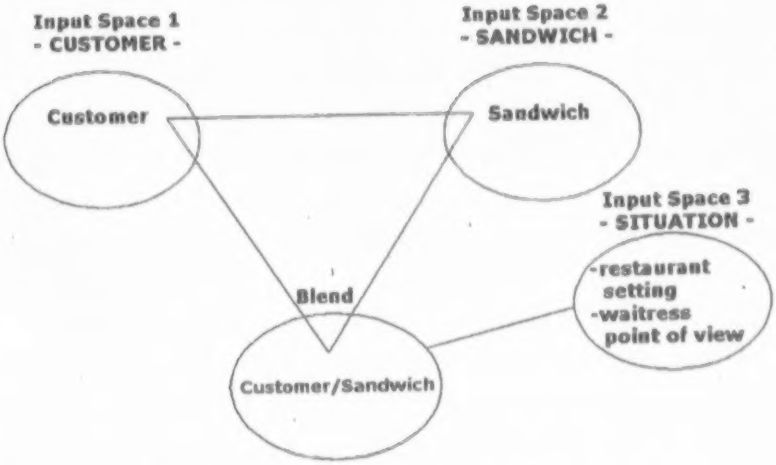
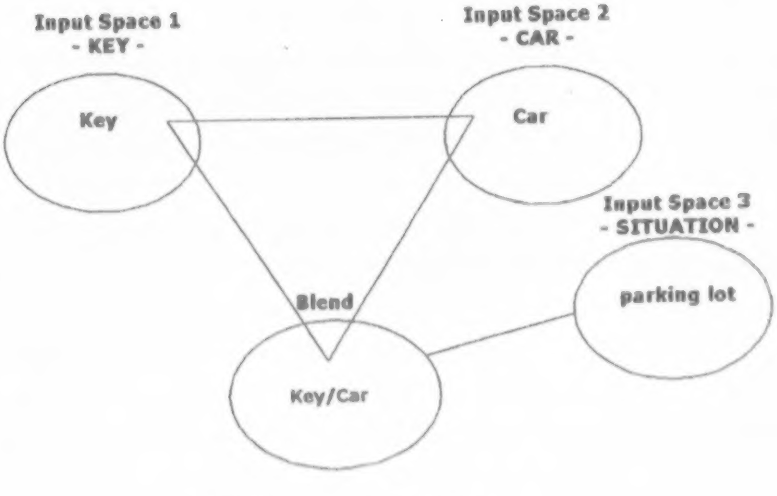

Input Space 1
- CUSTOMER -
Customer
Input Space 2
- SANDWICH -
Sandwich
Input Space 3
- SITUATION -
-restaurant setting
-waitress point of view
Blend
Customer/Sandwich

"The ham sandwich is at table 7"

Figure 3

Figure 4


Input Space 1
- KEY -
Key
Input Space 2
- CAR -
Car
Input Space 3
- SITUATION -
parking lot
Blend
Key/Car

"This is parked out back"

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All papers deal with the topic of the conference: Gilles Fauconnier and Mark Turner's theory of 'conceptual integration' (also known as 'blending'). During the last nine years, blending research has developed from an extension of Fauconnier's mental space theory which was supposed to handle the intricacies and emergent properties of specific things such as counterfactual constructions and metaphors to a vast research programme about what constitutes cognitively modern human beings: about the way we think. Today blending is investigated in a broad range of areas: literature, linguistics, psychology, semiotics, neurology, musicology, social science, art, philosophy, mathematics, anthropology, and film science.

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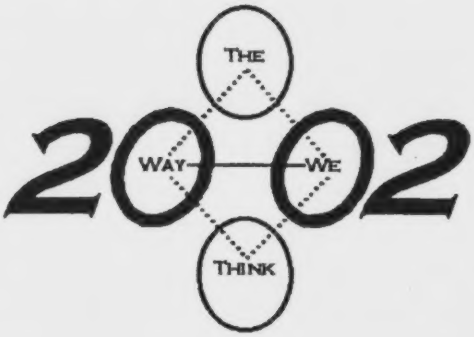
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Preface

The present publication gives a survey of current research in 'conceptual integration' ('blending'), which was introduced into cognitive science in the early 1990's by Gilles Fauconnier and Mark Turner. In the two volumes which comprise this issue are whole papers as well as abstracts for papers which have been submitted to *The Way We Think*. The publication contains written versions of and (extended) abstracts for the papers given at the conference.

The conference is the first of its kind. In the past blending has been dealt with in individual papers and small workshops, and recently in keynote addresses and theme sessions at various larger international conferences (e.g. The International Cognitive Linguistics Conference, 1999 and 2001). *The Way We Think* is the first major international conference focussing on blending, or conceptual integration theory. The motivation for the conference is that blending theory has developed over the last few years into almost a school within a school ('second generation cognitive science'), with practitioners from diverse fields of the humanities and cognitive (neuro-)sciences. The organising committee and the blending community in general think that the time has come for blending theory to be evaluated, explored and challenged at its own major international event, where blending researchers and people with related interests in cognitive science will have the opportunity to meet and discuss.

There is an official website for blending research at:
http://blending.stanford.edu

The editors thank all contributors for their effort and collaboration.

[We can all get to a point …] New Media *Art* and Conceptual Integration

Morten Søndergaard
Curator
Museum of Contemporary Art
Roskilde.

New Media Art punctures spaces. And in doing so it activates conceptual integration on a very complex level. I am currently investigating how this space-puncturing takes place. I will outline three levels of conceptual integration in New Media Art: Sense-scissoring: Fusion of art forms; blending of the conceptual spaces of "high" art and everyday life; activation of judgement in aesthetic spaces. All three levels are directed towards a reconfiguring of the social construction of the art spectator, and are changing art as well as the art institutions in some very interesting directions.

According to Lakoff and Johnson,

> Cognitive science has something of enormous importance to contribute to human freedom: the ability to learn what our unconscious conceptual systems are like and how our cognitive unconscious functions. (Lakoff and Johnson 1999: 540)

I will claim that New Media Art – like contemporary art as a whole – at its best demonstrates exactly how this important "something" functions to an audience. It does more than that, it plays with our ability to blend spaces by puncturing the spaces we think we know so well, and make us aware of our freedom (in the sense of Lakoff and Johnson).

I will deal with conceptual integration theory on a very practical level as I will walk through the field of New Media Art – with starting point in one particular work by the Finnish artist Aija Liisa Ahtila, "The House", which can be seen at Documenta 11 in Kassel until end September.

But first, shortly, I would like to focus upon the concept New Media Art.

New Media Art is a “category” that in itself demonstrate how our judgment is in play when conceptual integration is at work. It shows, moreover, that this play is inherent in every emergent structure within a new field of knowledge. But it also shows, clearly, that new conceptual spaces are not always the most elegant ones (taken from fleshy experience).

The term "New Media Art", what does that mean, exactly? It is perhaps a blend of the older term, media art, which in its own term is a blend of "media" and "art", and the somewhat unspecified adjective "new". Now, the integration of media and art - what does that suggest? It is not clear at all - on the one hand, it could imply that art is mediated. Or it could imply a certain *form* - an expression formed, as it were, by the language of a medium. I.e. laud speakers or video. The adjective "new" does not help much, since it induces a separation between, implicitly, "old" and "new" media, where by is meant perhaps digital and electronic media. But New Media Art very often finds its inspiration in earlier forms of mediated art using as dated technologies as the radio and magnetic tape.

We are, in other words, in a situation in which a critique of what Kant called reflexive judgment, and “aesthetic judgment” as such, is very active indeed in the arts. Kant speaks (in Kritik der Urteilskraft) about a unity of understanding and imagination through a certain principle that is connected to a subjective sensation, the principle of common sense. Now, Kant uses several terms for this, Gemeinsinn, which is perhaps best known, but also the term that I want to highlight her, Die allgemeine

Stimme. Interesting metaphor, where the operative word, Stimme, both refers to Stimmung (in tune), Bestimmung (causated) and Zum Stimmen (to vote). In Kant, this common voice (or common sense) is central to the reflexive judgment also known as Aesthetic judgment. Die allgemeine stimme and the unity of understanding and imagination in a "sensation" according to Kant give us both the object to judge and the rule to judge the object by.

In Aija Liisa Ahtila's “The House” it is precisely this common voice which is being problematized. “The House” is about what I would call a “disturbance” in the unconscious cognitive levels of existence.

“The House” consists of three large projections

“The House” is consists of three large projections of synchronized DVD-films, that form a 3D landscape. The main-character in the work, a woman in her thirties, apparently alone and living in the country in Finland, has a problem that she is trying to solve: Sounds from objects outside the house, like her car or the cows, emancipate themselves from their source – and become flesh in the living-room. The car drives on the walls etc. Spaces are blending out of control.

> Outside a new order arose, one that is present everywhere. Everything is now simultaneous, here, being. Nothing happens before or after. Things don’t have causes. Things that occur no

> longer shed light on the past. Time is random and spaces have become overlapping. (Eija-Liisa Ahtila in: Maria Hirvi, Kiasma 2002)

For that reason she is sowing black curtains so that the sounds can return to their sources and not enter the living-room. There is a fine balance between the isolation of the perceptive individual and the puncturing of the almost psychotic space that this individual is trapped in. Freedom is given to her in Ahtila's work when she manages to enter the reality-spaces outside her house instead of them uncontrollably entering her private space.

Scenes from "The House", 2002

According to Lakoff and Johnson we must use the empirical methods from cognitive sciences that allow us to explore the workings of the cognitive unconscious. I would like here to add the methods that art-works like Ahtila's the house gives us.

Aija Liisa Ahtila's "The House" is a very poignant example of how unconscious layers and conceptual integration is an important part of the sensibility of New Media Artists. The set-up of the work is three screens, each showing different angles of the story being shown and told.

In many of Ahtila's works, there are an ongoing play between space, body and brain. This game is activated through the construction of a sequence of spaces which draw attention to unconscious layers that are all active in our mode of being conscious about certain functions or meanings in space, even if we might not be aware that this is the case. What is going on here is a way of rendering space visible inside the space that first emerges when you have arrived at a point that marks a transition between a "normal" everyday consciousness and the unconscious layers – a point that could be designated as a space between spaces – or simply "judgment's space". In Ahtila's "The House", the activation of judgment's space transpires through overlooked and faded "objects" from everyday life – a car, a cow, the television, a curtain. What can we say about an artistic strategy that wants to display the unconscious cognitive functions? How do we get to that point?

According to Gilles Fauconnier, spatial constructions are always connected to a way of thinking – to a discourse. The construction of space represents a manner in which we think and speak. Furthermore, the construction of space involves certain crucial inter-medial processes in such a radical sense that instead of talking about a "reality", we ought to be talking about a "reality-space".

Before the reality-space and the identity can be brought "into action", the task is to gain an understanding of which elements the spaces we are involved with are built up from – and especially of how we can identify ourselves in relation to these elements. In the case of Ahtila, it can be said that he taps into a normality-experience that is linked with the recognition of something we have seen before – a recognition which he then *punctures* through a number of different strategies. Either by rendering the filmic space almost realistic, but getting the small very unrealistic elements to “stare” right back at the surprised viewer. Or by allowing the models of the world to play out a number of scenarios – which are in themselves discursive spaces that the visitors represent and live inside every day themselves.

We use the expression “becoming familiar” with something– or maybe we talk about “getting into it”. We would so much like to *inhabit* that which we understand, to settle ourselves comfortably, in a physical sense, within the surroundings that we are experiencing. In such a way, the language discloses unconscious structures in our way of perceiving the world and reality. In many New Media artworks of, however, it is not possible to “inhabit” any space easily – Ahtila’s spatial media constructions are namely calling attention to the fact that we build up normalcy against a backdrop of extremely conventional spatial perceptions, which often – menacingly - lean themselves up against surveillance, estrangement, isolation and a generalized dissolution of identity.
[We can all get to a point …]

Ahtila’s “The House”, as well as many of the artists that I come across, are in possession of a sensibility for conceptual spaces and the unconscious foundation of what we see and know. However, the pathway in toward this sensibility is never a simple one, because it always involves a fight against Die Allgemeine Stimme.

Accordingly, it always includes a loss of "reality". A loss of that reality we – and the art-spectator - thought we knew. The question is what this loss of reality means in New Media artworks? Is it a form of virtualization and concomitantly an example of the de-localizing of artistic authenticity, in the manner that, for instance, Paul Virilio has articulated this? Is the spatial construction that occurs in the intermediate artwork a loss of reality-as-space?

In Paul Virilio's writings we find a number of the central metaphors that manifested themselves in much of the thinking that was going on in the art scene in the nineties – and even now. What lays there before us, then, as a vitally important task is to *examine* the function of these metaphors – their discursive character and conventionality – in an attempt to understand the 'alternative rationality' of which these metaphors, in their capacity as categories in a self-consciously 'new' theoretical language, are co-creators. And it's no secret that this theoretical discourse can, in all its essence, be designated as belonging to deconstruction, a fact that Paul Virilio already calls attention to in the first sentences of the interview.

Interestingly, Some of the most prevalent metaphors that are employed by Virilio (and which build up a somewhat different apprehension of reality-space than what Fauconnier conveyed) consist of: aesthetics (i.e., the plastic and modeled arts) are dead; the body is the last bastion; the media-created culture is an inferno of conformity; art has been dissociated or 'dislocated' from its material and physical site-specificity. According to Virilio, these circumstances are signs of the total virtualization which art has gradually been working its way toward since the time of the

Renaissance. In this vein, Virilio believes that art is going to dissolve itself in an uncritical reiteration of the commercial media-created picture culture.

Through an introduction of the *dissolution* as a possibility for being able to work with a different kind of consciousness about the world, Virilio envisions that, just maybe, a new territorialization of art can transpire: a puncturing of art as art. And the method of deconstruction, according to Virilio, is the sole means that we have left for being able to execute this puncturing of the traditional notion of art.

Seated especially behind Virilio's metaphorical rhetoric, there is a central deduction that I would like to touch upon here, albeit briefly. Virilio regards the entire occidental culture as being deduced to a 'virtual culture', steered exclusively by the forces of the market and the media. 'The ordinary person' and 'everyday talk' don't stand a chance of escaping from this virtual culture – they are victims of the deduction, you might say. According to Virilio, only the intellectual and the artist can manage to break away from this totally superficial and proto-fundamentalistic cultural state of affairs. Or else, art is facing its own destruction. Or so Virilio declares.

It's hard to disagree with Virilio when he says that there must be a shoring up against the rising tide of both the superficial and the fundamentalistic – in art as well as in society. But on one crucial point, Virilio is making a mistake: there *is* something behind Die Allgemeine Stimme! Virtuality and the reality-loss are not merely a "black spot", but rather a plunge down into the spaces of reality behind the transcendental voice.

The puncturing of space is not a virtualization but rather a spatialization of reality – the spatial puncturings in many of the works that I have mentioned today are accordingly also punctu*ations*; registrations of boundaries and mental trails frozen solid.

Thus, art's "reality loss" is primarily a manifestation of a critique of the habitually based faculty of judgment. A puncturing – and concomitantly punctuation - of the loss of "reality": not as a fact, but rather as a demonstration of the widespread (but incorrect) notion of reality as something abstract, objective, something "I reflect". The material reality-conception has truly become estranged from art, as Virilio correctly points out. But what do enter in stead are all the *other* reality spaces – the social, the political, the cultural, the personal and judgment's space.

As Ahtila's work clearly demonstrates, New Media art activate the aesthetic faculty of judgment by getting art to move forward into everyday life's otherwise segregated circuits – and accordingly, these works inspire us to look at both art and everyday life in a somewhat different way. What we have here is not an end point, but rather a turning point. A chance to explore the workings of the cognitive unconscious.

Cognition in Jazzimprovisation

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Abstract

Musical thinking offers a field of complex, preverbal cognitive processes, that can be studied in jazzimprovisation, a manner of expression comparable to everydayspeech.

In jazz there seems to be two main areas of attention that yield two mental spaces. One is the PHRASE, which is being conceptualized in this very moment, and stands in a dynamical relationship to the total form, the CHORUS, which can be thought of as the diagram of a temporal object, providing a certain amount of topographical information which guides the musical action. The one is being projected on to the other, resulting in a blended space, where the actual music occurs. Thus we can think of jazz-improvisation as "running the blend".

A mental network of the conceptual integration in jazzimprovisation is proposed, in which the social interaction in the jazz-group is a modifying factor, which can be represented as a third input-space to the network.

The brain itself imposes on human beings a split of the musical object into a temporal and a tonal part. This factor, together with the 3-second window of perceptual integration, influences cognition of jazzimprovisation.

Key References: Jazz * Improvisation * Attention * Perceptual Integration * Blending

1. Introduction

This paper is about musical improvisation, more specifically the type of jazzimprovisation generally known as bebop. Investigations of musical cognition have traditionally focused on the receiving end: what goes on in the mind, neurally and cognitively, when we listen to music? I have reversed this question, in asking what happens in the mind, when a skilled jazz-musician plays, and I have chosen to do so for two main reasons. First, many years of playing jazz on a professional level paired with a recent academic education has roused my curiosity concerning this musical practise which has so much in common with the everyday use of language. And secondly it is my belief, that research in musical conceptualization may yield results of a broader interest, throwing some light on the basic cognitive resources of human beings.

In the following presentation I shall be drawing upon recent neurological and cognitive research, including the notion of mental processes as networks of conceptual integration, and I will propose a network for jazz-improvisation. But I want to start off by introducing a phenomenological model of attention.

2. Attention in Improvisation

Classical Indian philosophy is a goldmine of phenomenological observations. For instance, in Yoga philosophy it is said, that there are two types of attention: the attention of the cat and the attention of the heron. The attention of the cat is directed towards one point: the mousehole. The cat can sit for hours, unmoving and constantly alert, ready to strike the moment the mouse appears. In contrast to this, the heron sits in a tree by the lake, with its attention spread over the entire expanse of the lake's surface, ready to sweep down and strike anywhere the moment there is a sign of a fish. According to yoga philosophy human beings possess the capacity for both of these types of attention, and of course, in order to develop the mind to its highest level, it is, among other things, necessary to perfect both types, the attention on the point and the attention on the expanse.

Now, attention is not only tied to a specific object - the mouse or the fish - it is at the same time closely connected to a specific act - the catching of the prey. For the improvising musician, attention is tied to the musical object, while being connected to the act of playing. In any kind of act we can identify this double-scoped attention of the cat and the heron. Even in a simple act, like placing a pen on a table, we have the attention on the pen and the attention on the table. In more complex acts, like football playing, one part of your attention is on the ball, and another part is on the topology of the field, including the position of the other players, your own position on the field, the possible trajectories of the ball etc. So we have here attention on the point, represented by the pen and the ball, and attention on the expanse represented by the table and the footbalfield.

For the improvising jazzmusician the attention is not, as many amateur musicians believe, directed towards the instrument. The workings of the instrument have become automatic, as have the theoretical issues involved, to the point where we can compare the act of playing improvised music to the speech-act. Consequently we find once again in the musical act this division between the point and the frame: the point will be defined as the particular phrase being played in this particular instant. The expanse connected to the musical act I shall define as what I call the metric-harmonic frame, a term that will be explained in a moment.

3. Musical improvisation as a mental process

At this point I wish to introduce the first attempt towards a heuristic model of the network of conceptual integration in jazz-improvisation (see Figure 1). The model is developed in order to provide a generalized overview of the cognitive processes involved in jazz-improvisation. It can also serves a a starting point for a more thorough musical analysis, however, it will become too specialized for this occasion and I shall leave strict musical theory out of this paper.

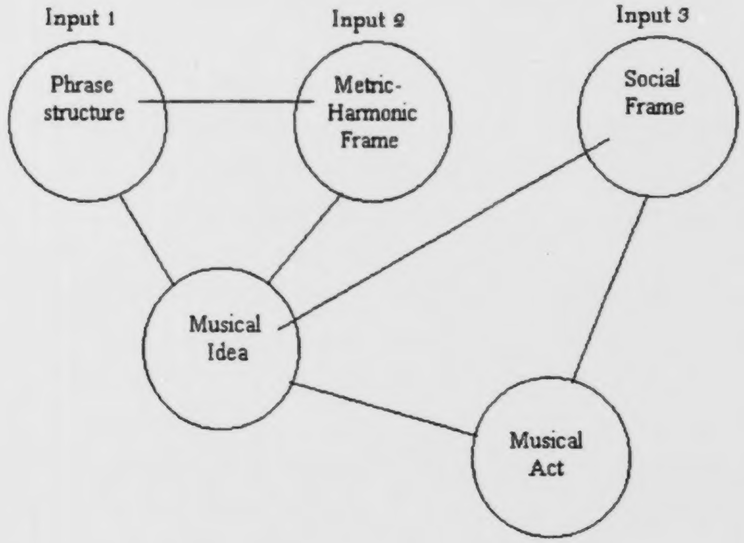
Input 1
Input 2
Input 3
Phrase structure
Metric-Harmonic Frame
Social Frame
Musical Idea
Musical Act

Figure 1: The Conceptual Integration Network of Jazz-improvisation.

Let us instead consider in more detail the inputspaces of the network. Inputspaces 1 and 2 show the distribution of attention between the point and the expanse: the "ghost" of the phrase structure and the metric-harmonic frame. The phrase structure in input space 1 presents itself to the

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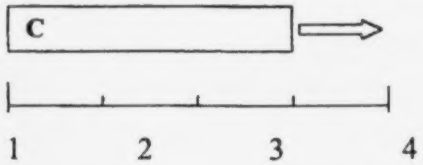
consciousness as a "ghost" of the phrase it is going to become, a pliable, flexible melodic and rhythmic structure, whose precise articulation is being regulated by the properties of the metric-harmonic frame. The process is comparable to online conversation: we know, what we are going say, but we sometimes need to search for the proper words.

Concerning inputspace 2, it is a well-known fact, that jazzmusicians use what they call the "changes" of the song as the guiding principle for their common improvisation. These changes are organized in a chorus, a succession of chords in a metric structure, which is played through repeatedly. (The chorus on its side is prototypically derived from a song, which incidentally to my mind constitutes one of the basic level-categories in music.) The chorus can be interpreted as a temporal and dynamic object with an internal structure, determined by its specific metric and harmonic properties. A blues chorus, for instance (see figure 2), will basically be seen as a 12-bar unit in time, subdivided into three 4-bar subunits with differing properties. Each of these 4-bar subunits has its own internal structure, including the particular quality derived from being the first, the middle or the last sub-unit.

In Figure 2 the basic metric frame is represented by the barnumbers on a timeline. We have three lines with different properties. The box with a C in it on the first of the three lines is meant to indicate that a C tonality is the guiding principle here. The arrow in the fourth bar indicates that at this point in time a tonal movement towards a new tonality, some kind of what in musical theory is called a dominant structure, is preferrable etc.



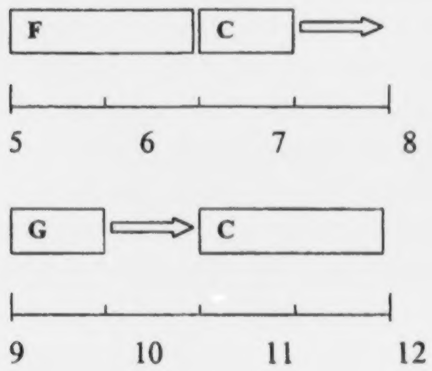


Figure 2: The Metric-Harmonic Frame of a blues chorus in C.

Not only do the harmonic properties (the C, the F, the dominants and whatever) influence the choices of the improviser, but the very position in the metric framework is also an important determining factor. For instance will factors like the position in time in relation to the "heaviest" downbeat (the "one" of the first bar), the lesser downbeats (the "one" of the other 4-bar units) etc. be involved in the shaping of the course of the improvisation.

The metric-harmonic frame is very flexible. Alternative structures can be superimposed on the existing, and in fact even a simple structure like this can be varied infinitely. But let us return to network.

If we allow that the attention on the phrase and the attention on the metric-harmonic frame both give rise to a mental space, there will be mappings between some of the melodic and rhythmic properties of the phrase onto some of the metric and harmonic properties of the particular position in the frame, resulting in the first blend of the network, which can be loosely termed as a musical idea.

4. The Social Input

Before this idea emerges as an act in the real world, other influences on the shaping of the music should be considered, influences arising from the social circumstances surrounding and pervading the space of the musical act. They are of two types.

First, there is the interaction in the group playing together (excluding of course solo recitals). The musicians - prototypically a rhythm section consisting of piano, bass and drums plus a soloist - combine their forces in the production of one musical object. The choices of one musician naturally affects the others. Different forms of interplay beween two or more of them appear. The constantly recurring narration, outlined in the metric-harmonic structure of the chorus, is expanded in a multiple dialogue - a process which probably is the singularly most unique aspect of jazz (see Berliner 1994, Monson 1996).

The second external influence is of course the public. The interaction between the small group (the players) and the large group (the audience) is a determining factor in the music, and many musicians testify that the reaction from the audience affects the online-shaping of the music, in terms of inspiration, spontaneous choices, even the very sound of the music. On top of this, a particular musical event will always be placed in a contextual network, where career, media, money etc. will influence choices of repertoire, chocies of expression, of playing-safe vs. taking-chances etc.

Social factors like these - the interaction within the group and the interaction between the smaller group and the larger group - are, of course, primarily musicological problems. But from a cognitive point of view it is my contention, that we cannot afford to leave them out of the picture. Where else should cultural and social forces exist than embedded in the cognition of the individual, taking an active part in the cognitive processes. Consequently I have defined, as a third inputspace to the network, the social frame as a mental space, which stabilizes the blend.

5. Microstructure and macrostructure.

The network of conceptual integration in jazzimprovistion is a generalized, heuristic model, which seeks to define a field for further musicological as well as cognitive investigation. I would now like to go one step further, and involve some of the few indications from neurology concerning musical activity in the brain. Two phenomena seem to be of particular interest here.

First, it is a well-known fact, that the brain, in temporal, auditory perception, divides its labor between two separate centers, one in each hemisphere. The one, normally situated in the left hemisphere, processes temporal data, while the other, normally in the right hemisphere, is concerned with pitch or sound-quality (Pöppel 1989). This division of labor between pitch and temporality, which is documented on the perceptual level, seems to be a fundamental phenomenon in musical activity, and is represented on higher levels also. For instance it is reflected in musical notation, which is basically a projection of tonal qualities on to a timeline, and in the conceptual division of a musical phrase in melody and rhythm. On the formal level, as we saw earlier, we differentiate readily between metric and harmonic properties. So, the human brain seems to be able to handle these data separately, and to fuse or integrate them on different levels on demand.

The second phenomenon that I wish to bring to attention is the 3-second window of temporal integration. Dr. Ernst Pöppel has demonstrated, that there is a clear limitation in the brain's capacity to accumulate temporal data online (Pöppel 1994). According to this research, the human brain has the ability to hold on to - as a snapshot, or as frozen time - segments of about 3 seconds length. Then the online storing capacity is used up, and it has to be cleared for new information to gain access. The clearing either results in a complete loss of information - a shorttime memory failure that we probably all have experienced - or in a more or less expedient longtime storing of the information.

This 3-second window is, according to dr. Pöppel and others, so deeply embedded in the structure of the brain, that it becomes a guiding principle for our interaction with the world. There are numerous examples of this, for instance we organize the sentence structure of everyday-language in chunks of app. 3 seconds length, and, returning to my main topic, bebop phrases can be shown to be consistent with this principle.

Having these two principles in mind, the differentiation of aural data into sound and temporality, and the 3-second window, let us return to the network of conceptual integration in jazz-improvisation, now in an expanded form (figure 3).

I have added to the previous model what could be termed a pre-blend structure. Two new input-spaces represent, on the perceptual level, the separate processing of aural data in a pitch-space and a temporality-space. In each of these spaces there is a division, consistent with the principle of the 3-second window, between material relevant for the construction of the musical phrase and material relevant for the construction of the mental representation of the musical form, which I have called the metric-harmonic frame. (This division of material is of course not absolute, the same material may well be relevant for the construction of phrase as well as frame.) Pitch-data and temporal data are then fused or integrated on the microlevel into the phrase structure, while simultaneously pitch and temporality data are integrated on the macrolevel in the construction of the mental representation of musical form, the metric/harmonic frame. It may be worth noting at this point, that the model is not uni-linear, as the mental processes can flow both ways. It is, for instance, possible, on the fly, to refer back from the metric/harmonic frame-space to either the pitch- or the temporality-space etc.

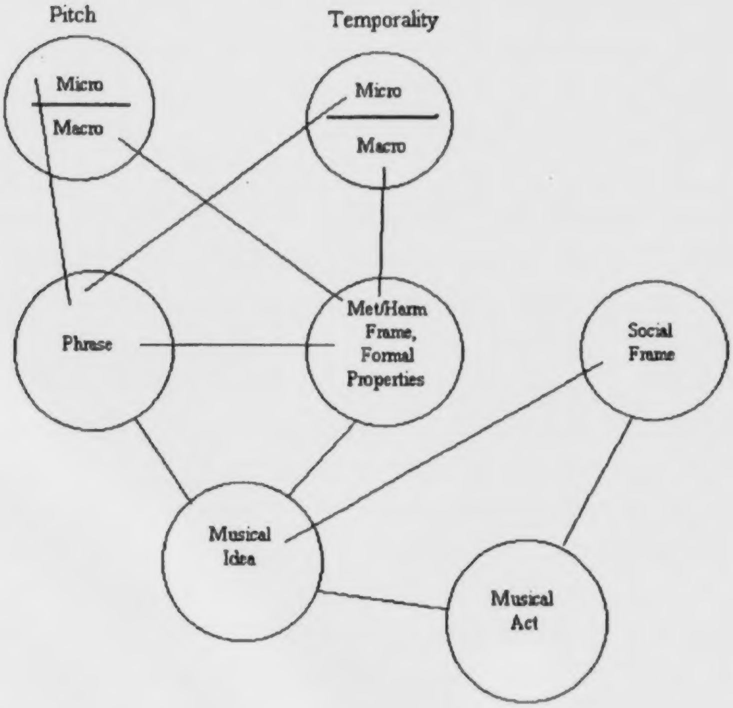

Pitch
Temporality
Micro
Macro
Micro
Macro
Phrase
Met/Harm Frame, Formal Properties
Social Frame
Musical Idea
Musical Act

Figure 3: Pre-blend structure

The differentiation and integration on the perceptual level leading to the mental representation of musical material may not be completely equivalent to a Fauconnerian blend, but it is certainly an inherent process in the brain. It is probably just one of many such preconceptual processes, necessary to handle information coming to the brain from different senses concerning the same object or state in the world, information that will be handled in different brain centres and then integrated. The interesting point however, when we approach this process from the perspective of the cognition of the improvising musician, is that the brain seems to be able to access the differentiated data directly from higher levels.

6. Musical Cognition

Once the full network is operative - and the music is playing - there will occur a continuous updating of the inputs: new musical material will be continuously processed along the timeline. Furthermore, the Fauconnerian processes called composition (the emergence of new relations not available in the inputs) and completion (the introduction of background frames, cultural models etc.) are evidently active. So this will naturally lead to the conclusion, that elaboration or ”running the blend” is as good a way as any to decribe jazz-improvisation.

(Introducing examples of actual music to the network is a quite simple and straightforward thing, by the way, but the musicological implications, in terms of reading music, understanding musical theory etc., will become too complex for this occasion.)

But let us take another look at the network. Music is known to be one of the activities of human beings in which the potential of the brain is most fully involved, and we have, in the cognition of the improvisor, several levels operating simultaneously. Cognitively seen the activity involves perception on the one side, a rich structure of background framing on the other side and in between these two, there is attention, volitional and intentionality, choices are made etc. This middle- or mesolevel of activity, could be called "basic level consciousness", reflecting the basic, operational level of categorization.

In the network I have proposed, the perceptional activity is represented by the preblend-structure. Starting with the first input, in Per Aage Brandts terms characterized as the presentation input, and from there running through the blends, from ghost to idea to act, it could be possible to speak of a volitional segment of the network. Inputs 2 and 3 are of course the background framing that the musical act must relate to, in Brandts terms input 2 is the reference input and input 3 is the relevance input. In other words the musical idea must refer to a specific set of formal or syntactic properties and be relevant to a specific socio-cultural setup.

Bringing this presentation to a conclusion, let us look at the following table, which will provide an overview of the process seen from a different perspective.

Microlevel Perception	**Mesolevel Volition**	**Macrolevel Discourse**
>30 ms < 3 seconds	3 seconds	> 3 seconds
Presemantic Temporal Integration	Conceptual Integration	Higher Order Integration
Packaging	Phrases, Sentences	Syntactic Structures

⟶ ⟵

Figure 4: Temporal Integration

On the micro- or perceptual level there occurs what dr. Pöppel calls a presemantic temporal integration, where the aural data is organised in discernable structures. It is of course at this level we have the perception of sound in time, our aural relation to objects and states in the world.

Opposite to this, on the other side of the table, we have the level of the discourse, the formal and socio-cultural background frames, the order that we try to reconcile with the world. On this level there is higher order integration of conceptual units into semantic structures, which are utilized operationally as reference for acts in the world.

In between these we find this mysterious thing, which is so hard to describe and define, but at the same time is the most well-known part of us, what could be called the mesolevel or the basic level consciousness. It is the operational part of cognition, the level of conceptual integration, where meaning emerges, where we act, musically and in other ways, the level of volition. The packaging of perceptual units into sentences, musical phrases and other recognisable structures seems to result from the interaction between perception and the mesolevel of volition. The conceptualization, the semanticizing of conceptual structures, the emergence of whatever musical meaning occurs, rises from the interaction with the background frames of the discursive level.

The arrows below the table are meant to indicate these two sets of interaction: between the mesolevel and the microlevel of perception on the one side and between the mesolevel and the macrolevel of discourse on the other. So we operate musically between a microlevel and a macrolevel, suspended, as it were, between perception and form.

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Conceptual Integration in natural Internet definitions: a Dutch and French discursive case study

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Abstract

This paper focuses on definition mechanisms in natural language, more particularly on how the Internet as definiendum was first conceptualized in a Dutch and French text sequence. Semasiological features of the Internet definitions refer to different conceptual metaphors, crucial devices in communicating the nature of an unknown (technological) experience in terms of previously known concepts, e.g. Internet as a road, a community, anarchy, etc. This descriptive paper first analyzes the interaction between these roles in terms of conceptual integration. The blend(s) are then linked to linear (Langacker) and hierarchic (Roulet) discourse structures: blends are then conceived of as dynamically evolving yet discursively manipulated conceptual instances: multiple-scope megablends this way are revisited in terms of fine-grained contextual variation, of syntactic and lexical mechanisms involved in their unfolding, as well as with respect to cotextual hierarchic arborescent structure.

1. Conceptual development and definitions

This paper is part of a Ph.D. research in which we examine the conceptual development of a new technological device in newspapers for a non-specialized audience. As a case study, we describe how the term *Internet* was first coined and explained in 10 different Dutch and French Belgian weekly newspapers.

In our contextual view of definitions, contrary to the traditional atomistic lexicography (like Rey-Debove 1971), definitions consist of the complete sequence definiendum DM and definiens DS, linked by a definition relationship. According to Whitehead and Russell (1927^2: 168), we distinguish two types of definitions, transposed into a cognitive grammar perspective (Langacker 1987). The first type, explicit definition, conceptualizes the DS as a thing, through a nominal predication. The link DM-DS is an atemporal stative (identity) relation (Langacker 1987: 230) or an (often imperfective) process, as in

(1) C'est bien plus qu'un Minitel international.
It [the Internet] is actually more than an international Minitel.

Implicit definitions conceptualize the DM as (part of) a process, i.e. part of a verbal predication.

(2) Internet a, certes, des concurrents sérieux, plus ordonnés et plus simples à l'usage, comme CompuServe […], mais il est moins cher.
Internet has, no doubt some serious competitors, more regulated and easier to use, like CompuServe […], but it is less expensive.

In authentic text sequences, we often find explicit and implicit definitions within one single sentence.

2. Data and methodology

In this paper will focus on the discursive development of the Internet concept in two text sequences of our 150-text corpus.

- "La planète Internet" [Planet Internet], *Tendances*, 7 April 1994 ;
- "Kommunicatie. De postbode blijft thuis" [Communication. The postman stays at home], *Knack Magazine*, 21 September 1994.

The criterion for this selection was the number of sentences with Internet or anaphoric reference to the term. Both texts offer the highest number pivot Internet for the French respectively Dutch sample of the 150 texts in our corpus. The French sequence's source is a business newspaper; the Dutch text is an article of a general news magazine.

3. Theoretical framework and tenets

3.1 Discourse in cognitive grammar

Langacker (2001: 175) conceives of linguistic structures in discourse as instructions to modify current discourse space as change in focus of attention within a viewing space, where the previous conceptualization fades out. Langacker gives some interesting ideas about discourse and conceptualization.

1. This unfolding is then seen as a progressive conceptual updating, an idea in line with his idea of dynamic conceptualization in focus chains (Langacker 1999: 42-43).
2. We should not confuse the conceptual organization or grammatical constituency and conceptualization itself.
4. Updating does not only occur at the clause level (2001: 177).

More generally, his analysis stresses the linearity of discourse, which according to Langacker could serve as catalyst for discourse studies.

3.2 Discourse in the Geneva model of Eddy Roulet

In a different tradition, Eddy Roulet and his team developed a descriptive model for textual organization, work they label as interactionnist cognitivism (Roulet et al. 2001: 9). A central idea is that oral or written

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texts show a hierarchic structure, to be subdivided in exchanges E, interventions I and textual acts A. These elements can be connected by means of dependence (principal elements with subordinated elements pro (+) or con (-)) (Roulet et al. 2001: 54-55).

The model leads to arborescent discourse organization. Furthermore, the hierarchic dimension of the text is linked to a large number of other modules, like the conceptual, linguistic etc. Roulet indirectly quotes Langacker (Roulet et al. 2001: 69) and admits that cognitive, social and interactional constraints guide the organization of discourse. The sentence then is the standard form of this organization (Roulet et al. 2001: 70). Although the model has focused on the link between text structure and praxeology, the topical and informational analysis is only at a very elementary level (Roulet et al. 2001: 275). We conclude that the Geneva model, still under construction, needs deeper insight about the conceptual structure and linguistic (lexical, syntactic, semantic) layers of discourse.

3.3 Blending theory

Fauconnier and Turners blending theory (Coulson 2001, Fauconnier 1997: chapter 6, Fauconnier and Turner 2002 [hence TWWT]) claims that conceptual integration is a common cognitive operation.

In the case of scientific progress (and technological artifacts linked to this progress), blending creates unity in particular manifestations of meaning constructions (Fauconnier 1999: 108). A second idea is that language itself offers entrenched ways of compression meaning into blends through underdetermined grammatical patterns (Fauconnier 1996; Fauconnier and Turner 2002: chapter 17; Mandelblit 2000).

Whereas mental space theory did interesting work on sequential discourse management, as for tense and mood (Fauconnier 1997: chapter 3) work in conceptual integration apparently focuses on the overall networks built up in the discourse process. Rohrer (1997) and (2001) focuses on blending mechanisms in visuals, Gore's vision of cyberfuture and interface design.

3.4 Building bridges

The different frameworks, share an interest in discursive conceptualization, but offer a complementary view on mental processes in discourse and grammar. In this paper the three views are modestly brought together.

We examine three different concrete points. These three questions are reflected in the order of analysis under 4. First, we describe the text sequences according to the Geneva model, in English. Second, we show that discursive definitional sequences are not merely multi-metaphorical, but take the form of complex conceptual blends. Third, we focus on some linguistic mechanisms of blending at both the micro-syntactic and the macro-syntactic level.

4. Analysis

For a better global understanding of different discursive strategies involved, we successively analyze the Dutch and French sequence as indicated above (*). Numbers of acts and intervention sequences are between square brackets.

4.1 Internet as unique thing in many respects (Dutch sequence)

4.1.1 Arborescent structure

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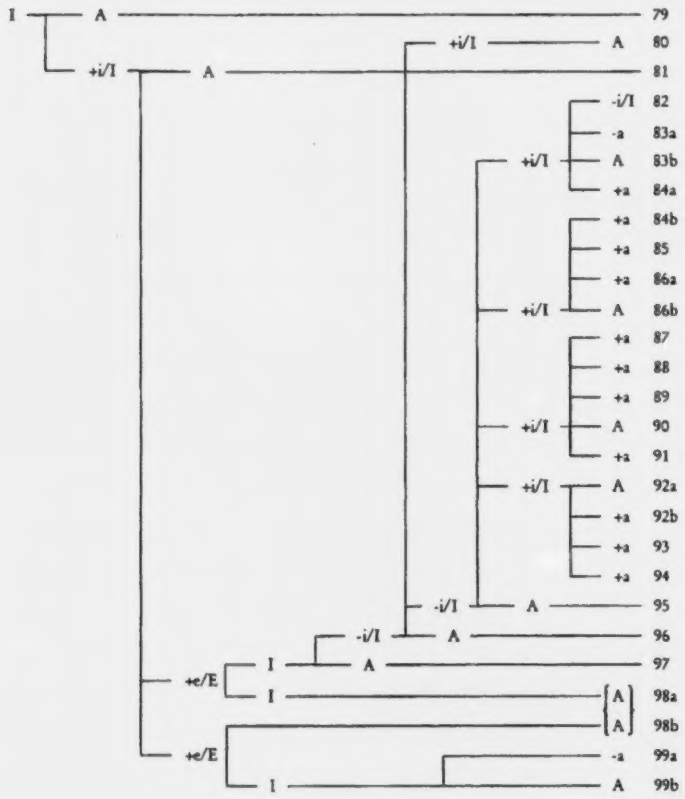
The French except [79-99b], contains 17 mentions of Internet. Its arborescent structure is visualized in Figure 1. A discussion about e-mail providers precedes this sequence. Belnet, the main Internet provider, is introduced in principal act [79]. Act [80] says the Internet is unique in many respects ("in menig opzicht"). This principal act is followed by a complex intervention [82-99b]. This sequence asks if Internet is anarchy (in the first "respect").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99b

Figure 1: Arborescent structure of Dutch text

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Act 80 offers the connecting title *Anarchy*. At first sight then the answer to the anarchy question is positive. Then, we get a succession of interventions.

- Act 82 performs Clifford Stoll, an American Internet guru. Although Stoll thinks the Internet is anarchistic,
- Belgian tech expert Luc De Vos (83-84a) only bears out there is a lot of freedom on the Internet (opposite marked by means of a concessive connective *but/NL maar*).
- Then follows a historical sequence:
    - the American military 25 years ago (84b-86b) wanted a non-centralist organization, which explains the stray Internet organization.
    - [87-91] focuses on big user's (universities, public services, computer freaks) and discussion groups in the nineteen eighties.
    - [92-94] on the small users, who got access after the public services and universities.
    - This historical section now reaches the conclusion that the Internet does not have rigid structure today (95).

Not only the narrator's historical intervention, but also De Vos's (and in an imbricate way Stoll's) voice is being used as an argument in favor of the [95] "absence of structure". In spite of [82-95], the outsider (as opposed to the specialist) still considers the Internet as anarchy (96). Note the concessive (counter-argumentative) progression of the previous sequence (-i then A).

Then [82-96] (with the outsider's « winning » voice) is reinterpreted as counter-argument for a new principal act [97], again the voice of expert De Vos, who claims that Internet is the most functional network. The concessive marker *however/NL echter* indicates that the outsider's voice is being overthrown, although the functionality of the network does not intrinsically answer the anarchy question. So, anarchy is indirectly answered by functionality.

Expert De Vos successively engages in a (fictive) conversation with expert Van Nuffelen, who defines the Internet as « reliable » (98a) and « fast » (98b). Whereas the first adjective, echoes an exchange with the previous expert's [97], [98b] opens up a new Internet sub topic: its speed. [99a] and [99b] compare two of the first Internet « respects » [81]. Speed is considered more important than incoherent organization: Internet is not anarchy, but speed.

The function of the intermediate title [80] is clearly to trigger the attention of the outsider's voice (it is not only shocking, but might reflect the reader's viewpoint) in [96]. Although the title remains pervasive as conceptualization, the discursive organization make this conceptualization the decisive one.

The sequential progression of Internet is important for the analysis of thematic progression. It does not, however, take into account the global position of every conceptual position in the global hierarchic organization of voices. The journalist/narrator decides of which triggered voices have right of way over others. Voices or actors performing on the conceptualization stage are organized in terms of his own view.

4.1.2 Discursive multiple blend(s)

The Dutch sequence gives a clear unpacking prompt (TWWT: 332) right from the start [79]: the uniqueness in many respects shows the multifaceted conceptual layering of the Internet concept. In other words, the Internet concept is constructed as a multiple blend (TWWT: chapter 14), a complex network, where a multitude of input spaces interact and where, eventually, blends serve as input spaces for successive blends: "all different spaces are selectively projected to a blended space in which event participants inherit features of all different inputs" (TWWT: 281). This network is visualized in Figure 2.

Three different blends twine together in this sequence. The sequence starts with the polyphonic discussion on the assumed anarchy of the Net, by the two gurus/insiders Stoll and De Vos. The explicit lexical mention of the "anarchy" input space calls for a counterfactual non-anarchy input space, people having a lot of freedom, without a Board of Management. Internet itself is "of no one and everybody at the same time". Note an interesting paradox. Although the coincidence of both insider's input spaces in the blend is set up as a simultaneous, overlapping conceptualization, overlap is impossible in a linear way. Coincidence is inferred through a conventionalized lexical element "at the same time". We call this phenomenon the paradox of fictive simultaneity. Moreover, the use of the polyphonic interplay of self-proclaimed authority is well considered, since it blocks direct refusal of the narrator's by the well-informed reader.

A second observation is about the lexicalization of the input spaces. The positive input space is lexically labeled "anarchy", two times, in [82] and [83]. This labeling is enforced by the intermediate title ANARCHY [80, capitals], which triggers this positive label at the start of the intervention. This striking title would make us believe that [80-96] is about anarchy. In our blending view, we now understand that the positive anarchy is necessary to set up the counterfactual non-anarchy input space. It is a generally accepted principle in cognitive psychology that negations cannot be set up without reference to an analogical positive space. The direction between the two input spaces then is linearly marked in this discursive sequence.

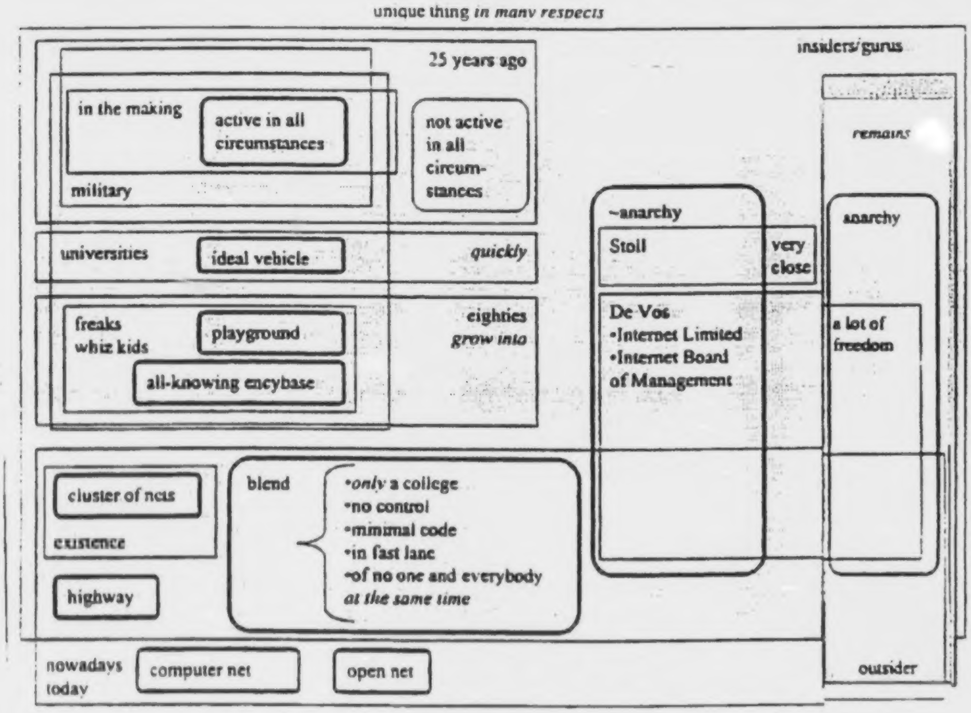
unique thing *in many respects*
25 years ago
insiders/gurus
in the making
active in all circumstances
military
not active in all circumstances
remains
~anarchy
anarchy
universities
ideal vehicle
quickly
Stoll
very close
freaks
whiz kids
playground
all-knowing encybase
eighties
grow into
De Vos
•Internet Limited
•Internet Board of Management
a lot of freedom
cluster of nets
existence
highway
blend
•*only* a college
•no control
•minimal code
•in fast lane
•of no one and everybody *at the same time*
nowadays
today
computer net
open net
outsider

Figure 2: Internet multiple blend

Third, we know that "to put together that integrated scene, blending takes opportunistic advantage of their all being structured by locations" (TWWT: 287). This sequence, conversely, displays a similar outer-space change through time (Fauconnier and Turner 2000: 291). The temporal scaling is lexically marked: 25 years ago [84], the eighties [90], nowadays/today [84 and 95]. Note that time syncopation (TWWT 324) is normal, because it reflects the fact that scientific and cultural concepts are the products of successive blending over generations (TWWT: 295). The interesting point here is that a given culture displays the way in which it conventionally scales and perceives the evolution of a technological artifact.

4.1.3 Linguistic prompts for blends

Linguistic structures provide underdetermined prompts for conceptual blending schemes. We will now describe some lexical and syntactic prompts in terms of blending.

A Lexical prompts

The scaling indicated above is not sufficient to get a blending effect. It is syntactic and lexical simulation of overlapping time syncopation that causes the blending. Linguistic mechanisms contribute in reducing the distance between syncopated temporal spaces.

Note the following lexical continuity/simultaneity expressions in this respect:

- the progressive imperfective, change-of-state present participle in *Internet in the making* [88] (Dutch *Internet-in-wording*, literally *Internet in becoming*, note the not obligatory hyphenation in Dutch);
- *a Net which would remain active in all circumstances* [86] (Dutch: *een net dat in all omstandigheden actief zou blijven*), with the posteriority inference of activity valid until today;

- the use of *al snel* (literally: *already quickly*) with *not only* a sentence like *already quickly they discovered that it could not only store 'dry as dust' scientific information* [89];
- use of space building copula *remain* and *appear* (for a discussion of *blijken/s'avérer*, and *blijven/rester* in terms of cognitive grammar landmark building Sambre 2002b) and change of state pseudo-copula like *Internet grew into x (uitgroeien tot)* in [90].
- An interesting lexical lapsus linguae is the use of *vraagbank* [91], neologistic mixture of *vraagbaak* (hard to translate: encyclopedia or book responding to all sorts of questions) and *databank* (database). This *encybase* is the mix of the whiz kid's seminar scene blended with informatics. Intended as such or not, the word shows blended confusion of clashing frames.
- Finally, marking of a contiguity (spatial) conceptual effect in the marking of the outer-space relation between anarchy and non-anarchy in [82]: Stoll says it is not anarchy, but *very close* to it.

B. Syntactic prompts

Syntax also makes simultaneous reference to different input spaces. The selective projection of part-whole relations of the non-anarchy input space in [84] uses two mechanisms: negation of parts of the anarchy input, combined with the marked part selection through *only* in the following example. This mechanism we call antonymic dimming of outer-space relations (Figure 3): the dimming projects counterfactual parts (Fauconnier 1994: 96) in the opposite input (non-anarchy), which in turn are injected into the antonymic blend. This mechanism is linked to selective highlighting in *only*, which extracts part of the non-anarchy input and reference to the unreal antonyms (TWWT: chapter 11).

(3) Er bestaat geen Internet Limited, geen Internet Company, geen raad van bestuur, alleen een college dat zich inlaat met de protocols [84]
There is no Internet Limited, no Internet Company, no Board of Management, only a college dealing with protocols [...].

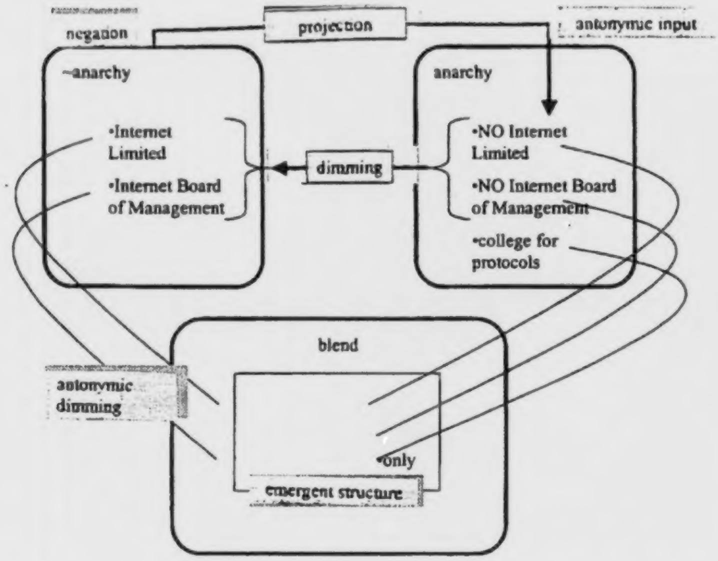
negation
projection
antonymic input
~anarchy
•Internet Limited
•Internet Board of Management
dimming
anarchy
•NO Internet Limited
•NO Internet Board of Management
•college for protocols
blend
antonymic dimming
•only
emergent structure

Figure 3: Antonymic dimming of outer-space relations

Similar side effects of hierarchic structure are found in concessive constructions (connective *but*, Dutch *maar* [82 and 83 (a and b)], where *but* introduces the principal act; the subordinate act then again marks the injection of the emergent feature via the mathematically transitive passage through the antonymic input, not directly via the initial input. Moreover, we indicated above that example (4) marks this passage as a contiguity *(very close to it)*.

(4) De Amerikaanse astronoom Clifford Stoll [...] beweerde dat Internet misschien geen synoniem is van anarchie, maar er toch héél dicht bij staat [82]
The American astronomer Clifford Stoll [...] claimed that Internet perhaps is not a synonym for anarchy but it "stands very close to it" (literal translation)

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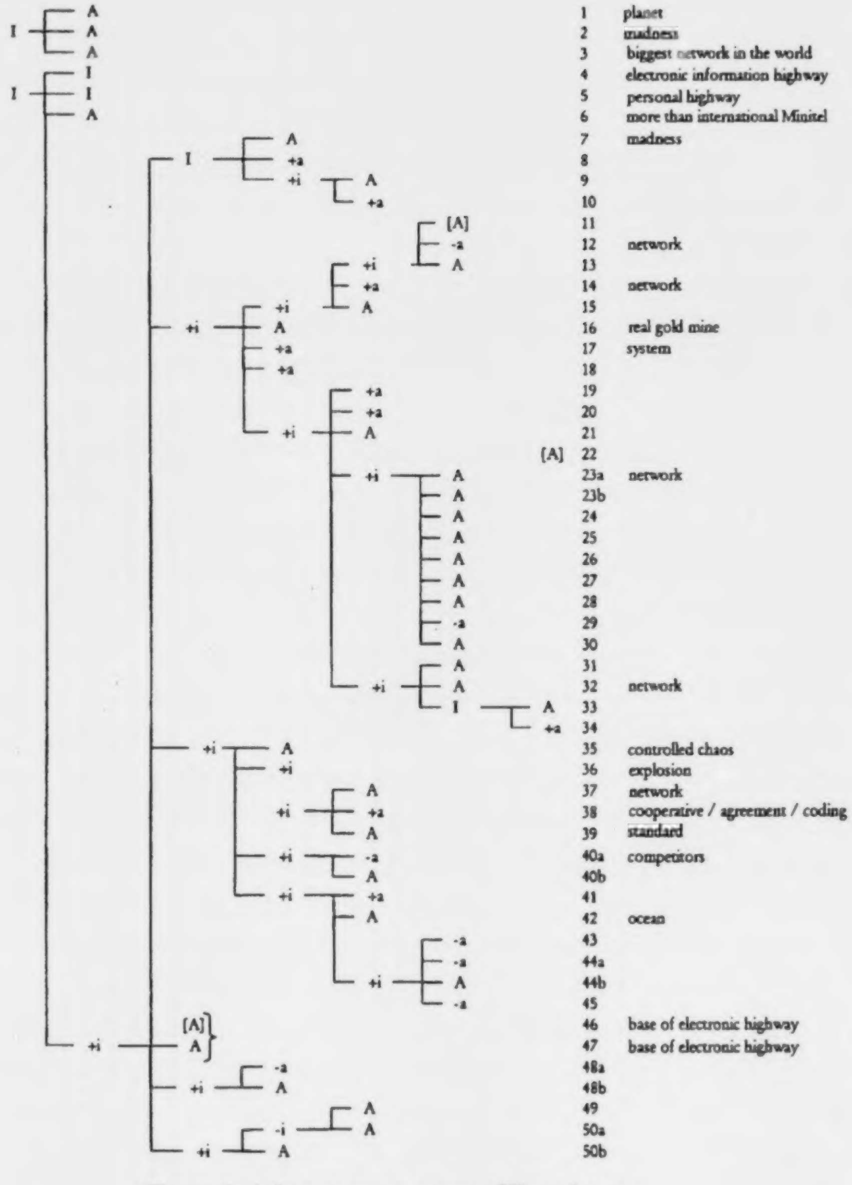
(5) Ik zou het geen anarchie noemen [...] maar de vrijheid
is inderdaad extreem groot. [83]
I would not call it anarchy [...] but the freedom is
indeed extremely big. (literal translation)

At the end of the sequence, [96] shows that the conceptualization is mainly an insider blend. The outsider keeps out of the blend. To him (dative construction) the Internet remains anarchy. In this sense, the uniqueness of the Internet is only given by the multiple insider blend, but also by the refusal of the blend by the outsider.

4.2. Planet Internet (French sequence)

4.2.1 Arborescent structure

The second text is fully described in terms of the Geneva discourse structure: Internet suffers from a kind of madness [1-2]. It grows very quickly [7-8]. The electronic highway [4-5] transformed into a gold mine: it gives access to the broad public [12-15] because of drops in prices and competing POPs (points of presence) [22-34]: Infoboard and EUnet. Internet is controlled chaos [35], a cooperative belonging to no one [38], so that it seems similar to an ocean of bits and bytes [42]. The success is so big that the Internet is often considered the base structure of Al Gore's electronic highway [46-47]: the most probable scenario foresees an integration of Internet technology in the electronic highway [48]. Although the "openness" of the Net attracts undesired messengers sending junk mail [49-50a], it is not hard to drown the sender under a mass of messages, in order to break his connection [51].



1 planet
2 madness
3 biggest network in the world
4 electronic information highway
5 personal highway
6 more than international Minitel
7 madness
8
9
10
11
12 network
13
14 network
15
16 real gold mine
17 system
18
19
20
21
22
23a network
23b
24
25
26
27
28
29
30
31
32 network
33
34
35 controlled chaos
36 explosion
37 network
38 cooperative / agreement / coding
39 standard
40a competitors
40b
41
42 ocean
43
44a
44b
45
46 base of electronic highway
47 base of electronic highway
48a
48b
49
50a
50b
I
A
+a
+i
-a
-i
[A]

Figure 4: Arborescent structure of French text

Here the hierarchy is retroactive, i.e. the principal text act with Internet as base of electronic highway is at the very end of the sequence [46-47].

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4.2.2 Discursive multiple blends

A. Multiple-scope blends

Most French sentences are read intuitively as single-scope networks (e.g. Internet is a network, Internet is a road, Internet is chaos etc.). In a single-scope network the blend uses one organizing frame out of two in order to topologically organize the blend, as in source-target metaphors (TWWT: 126). Looking more closely into the discursive examples, we find however that the target is not given bare of filling information.

(6) L'autoroute électronique mondiale de l'information existe: elle s'appelle Internet […]. [4]
The electronic worldwide highway of information exists: it is called Internet and […].

(7) C'est bien plus qu'un Minitel international. [6]
It is a good deal more than an international Minitel (note: French early information network accessed through phone).

Example (7) not only shows that Internet is not a Minitel, but immediately conceptualizes it as an international network, whereas the original Minitel was active only on the French national territory. Moreover, the blending effect is caused by the construction *it is more than…* . In (6), the highway image is filled up as a electronic, (individual) global road of information. Although the concrete mapping of this scene is not given, we immediately understand this is not a "traditional" highway.

The single-scope blending effect then seems produced by the use of a noun (highway, Minitel). Nouns as a matter of fact conceptualize things as regions in conceptual space (Langacker 1987: 494). Sweetser (1999: 147) convincingly conceives of adjectives as inter-domain aspects of the frames associated with the thing instead of aspects of the thing itself. In our examples something else is going on. The adjective takes part in distorting the spatial domain (e.g. *international, worldwide*) of the profiled entity's (*Minitel, highway*) frame on the one hand, and modifies stereotypical metonymic parts of the frame (like movers on the highway, which here are not people in vehicles, but information itself). A first conclusion: adjectives (can) participate not only in setting the blended space (single-scope network), but in actively building the emergent structure of this blend (multiple-scope network). Although adjectives are underdetermined, this conceptual criterion distinguishes simplex networks from single-scope networks. Second, as a completion, we see that even single-scope networks can have multiple inputs (TWWT: 295) as in example (6).

Note that not only adjectives are used as blending mechanisms. In (8), the gold mine image is not about quarrying mine gold, but about the – unconventional – contribution huge crowds are paying in order to access the exploitation.

(8) C'est une véritable mine d'or potentielle depuis que le
grand public y accède moyennant une redevance. [16]
It is a true/veritable potential gold mine since the large
public accesses it on payment of a contribution.

Here again the nominal input space is being transformed in emergent structure by the subordinate temporal clause.

B. Megablends

Individual sentences most frequently contain reference to maximally two conceptual metaphors (Sambre 2001: 19). Hierarchically speaking, the following metaphors open up new interventions in the text tree as principal acts.

- Internet is a highway [3]; companies can transform it into their personal highway [4].
- Internet is madness [7-15].
- Internet is a gold mine [16-34].
- Internet is controlled chaos [35-45]: the cooperative [38] controls the chaotic ocean [42] of bits and bytes.

An important principle is that the Internet is basically conceptualized in terms of a static image (network, highway, system, …) or in terms of a (fictive) motion (chaos, ocean, order, …). These two spaces serve as two generic spaces of the blend. When two thin lines merge in an underlying space, we get a "packing" or compression effect. Although sentences in the text mostly refer to maximum two input spaces, there are obvious conceptual links between them. But these are not given linguistically. We represent the complex mappings between input spaces in Figure 5.

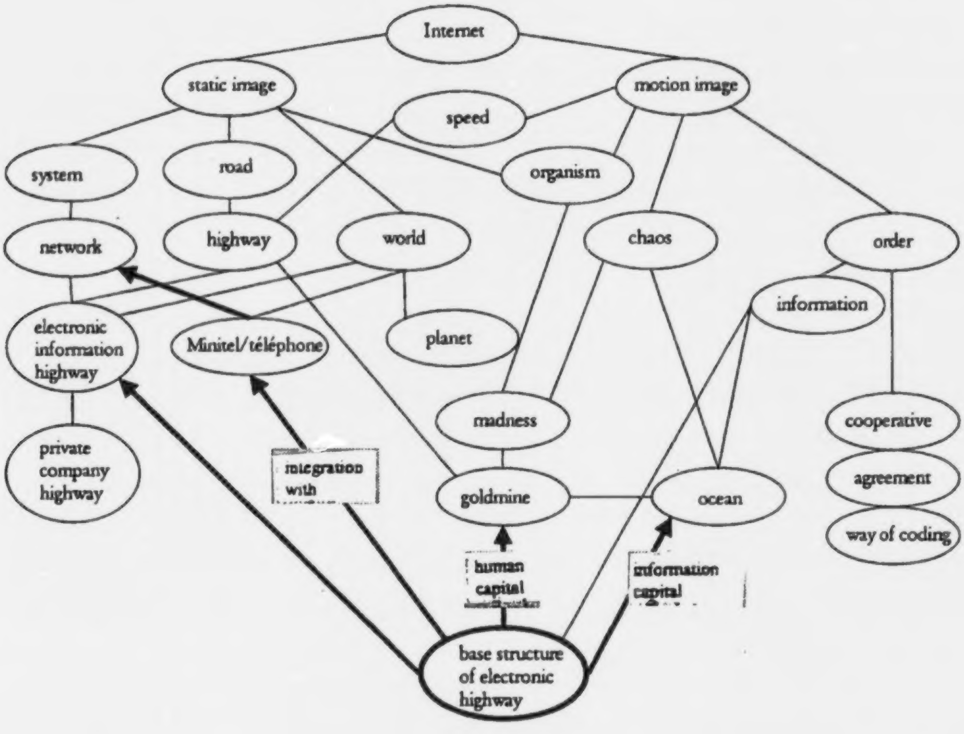
Internet
static image
motion image
speed
system
road
organism
network
highway
world
chaos
order
information
electronic information highway
Minitel/téléphone
planet
madness
private company highway
integration with
goldmine
ocean
cooperative
agreement
way of coding
human capital
information capital
base structure of electronic highway

Figure 5: French Internet Megablend

4.2.3 Hierarchy as linguistic alignment prompt

We go back from the blending to the hierarchical text structure. In the accumulation of input spaces, we get a progression of blends, where blends successively serve as inputs for other blends (TWWT: 283). Note that the linear text progression of the several subordinate interventions causes an advanced dispersion of meaning, similar to the Dutch network, with the proactive hierarchy (preposition of principal act). In the French text, "as the network develops, pressure is put on the various generic spaces to align"

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(TWWT: 283). The alignment is realized by the postponed principal text act.

> (9) Le succès d'Internet est tel qu'il est considéré, parfois, comme la structure de base de l'autoroute électronique chère au vice-président américain Al Gore. [47] The success of Internet is such that it is considered, sometimes, as the base structure of the electronic highway dear to the American vice-president Al Gore.

Hierarchically speaking, the retroactive text structure, with the principal textual act [9] for Internet, structures the complete preceding sequence. The unification of the three previous subordinated interventions Internet as madness [7-10], as gold mine [11-34] and controlled chaos / ocean [35-45] are integrated into the principal act [47] by act [48]:

> (10) «Une convergence entre les réseaux téléphoniques et de télédistribution pourrait dépasser Internet et menacer son intérêt, commente le mensuel américain Bytes, mais avec son énorme capital humain et informationnel, le scénario le plus probable est que sa technologie sera intégrée dans l'autoroute électronique.» [48] "Convergence between telephone networks and teledistribution [cable network] could pass Internet and threaten its interest, so does the American monthly magazine Bytes comment, but with its enormous human and informational capital, the most probable scenario is that its technology will be integrated in the electronic highway."

The reference made to the human and informational capital links the base of the electronic highway to the gold mine and ocean blend. This upward movement is visualized by the thick arrows in Figure 5 above.

Three observations are interesting with respect to the principal act. First, retroactive blending at the highest hierarchic level leaves intact the proactively unfolded blends in the previous subordinate interventions. But the principal acts triggers reference to the blends in the principal acts of these subordinate interventions. These subordinate principal acts serve as input space for an aligned blend in the principal text act of the complete sequence.

Second, in Roulet's model, this triggering leans on the idea of *mémoire discursive / discursive memory*: recognition of textual acts occurs through cognitive treatment and not in terms of linguistic structure (Roulet et al. 2001: 64-65). This view is similar to Langacker's conception of discourse, but the linear focus chains are here being rephrased in terms of hierarchic conceptual scanning. Blends reinterpreted as input spaces for successive blending keep their own input spaces as background knowledge even in the new blend. Both the position in the arborescent structure and reference to principal acts of subordinate interventions hierarchically mirror the blending alignment.

Third, the principal act explicitly refers to an American source, Al Gore. Cognitive integration as a conceptual mechanism is also a cultural datum. In this French-speaking discursive setting, Rohrer's (2001: 211) claim that "no serious alternatives have yet arisen to Gore's blend of cyberspace and cyberfuture metaphors" shows a different ideological mapping. The cyberfuture idea is not put forward as certitude, but as one probable scenario. In this European perspective Internet is mainly seen as one of the future's new communication networks: act [39] introduces the European Commission's alternative to Internet, the X-400 standard; [40] quotes it more "serious, ordered and easier to use competitors". This conclusion shows the need for a detailed analysis of every mapping, even for at first sight similar metaphors like the information highway. Moreover, the arborescent structure shows how the complete intervention [7-50b] is reinterpreted in function of the *more than an international Minitel* [6]. New conceptualizations are clearly ideological. Not only are they based on existent knowledge which is relative to new culture, this is why French Belgian texts refer to French Minitel, something which is impossible in Flemish newspapers, with different cultural beacons. They also differ according to the source they appear in. It might not be a coincidence that the French economic newspaper, which audience is composed of managers and entrepreneurs, coin the Internet as a gold mine. At this point, blending meets the ideological conceptions Althusserian Marxism, at the boundary between meaning and the conditions of production of the discourse (Althusser 1965: 240-242).

5. Conclusions

This paper focuses mainly on the relation between two theoretic frameworks: Fauconnier and Turner's blending theory, and the Geneva discourse model. We described two text sequences in the light of these two models.

For the blending theory, we see that conceptualization of Internet definitions unfolds not as multiple metaphorical mappings, but as multiple-scope blends. We described a few blending mechanisms active in Dutch and French linguistic mechanisms:

- the construction of counterfactual spaces of blending,
- the fictive simultaneity opposition between insiders' and outsiders's voices,
- lexical marking of temporal syncopation,
- syntactic antonymic dimming of outer-space relations through *transitive* antonymic input and

- the use of adjectives as multiple-scope emergent structure builders.

At the interface between hierarchic discourse structure and blending, the use of high-level proactive discourse structure serves as unpacking instruction. Conversely, retroactive discursive structure not only triggers the underlying unfolded blends as input spaces, but aligns them according to the principal text act of the sequence.

Arborescent structure in some way mirrors the megablend. Although other layers of Roulet's network, like the polyphonic instances involved, as well as mental spaces for time and space (Sambre 2002a), contribute in building the hierarchy, we believe that blending theory and hierarchic structure show two complementary sides of conceptualization in discourse. Our future research will try to further explore this link between blending and text structure.

Notes

(*) Due to space limitations, the original texts were not fully displayed. The author will electronically send the original Dutch and French text to the interested reader. Please send a mail to paul.sambre@lessius-ho.be.

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Mental spaces, mental architecture, and an excellent mistake

Per Aage Brandt

Extended abstract

New York Times QUOTE OF THE DAY

"No one who cannot rejoice in the discovery of his own mistakes deserves to be called a scholar."

DONALD FOSTER, New York Times, 6.20.02, — admitting that his work to establish Shakespeare as the author of an obscure poem is wrong.

"Our whole problem is to make the mistakes as fast as possible..."
J. A, Wheeler[1]

1. Where did mental spaces come from?

The following is a non-standard account of the matter; however, it might help understand some peculiarities of current styles of research in blending theory. The notion of mental space was born in analytic semantics and was mistaken for a cognitive concept — happily so, but the understanding of its hybrid identity is still useful.

As I now see things[2], the theory of mental spaces (TMS) was originally intended as an analytic means of explaining why certain propositions containing conflicting predications are possible, meaningful instead of being impossible, meaningless because self-contradictory, such as all propositions stating that in a sense, ’something is something else that it is not’...The TMS explanation, still wrought in analytic terms and thought habits of vericonditionality[3] (semantics is about truth, and to be meaningful is to be true in some world; meaning is thus reference), is the fresh idea that this ’not’ — ’something is something else that it is not’ — does not induce self-contradiction but instead indicates a contrast between copresent, competing, and structurally[4] cooperating semantic ’worlds’ underlying propositional meaning — in the analytic context a new and extraordinary sort of ’possible worlds’ (ordinary possible worlds would not admit active copresence in truth-making reference, since they are unlimited, whereas the new species must be limited for the sake of copresence). These new worlds were then called mental spaces, since ”(possible) worlds” would be misleading, and the new term allows both to include their limitation and to give a hint as to hos copresence was possible. In fact, this new solution to the old problem — of how e.g. the eyes of a girl could have two different and mutually excluding colors in a sentence about a portrait — had its price: it forced the theory to produce a new ontology according to which there is a semantic world in which several separate and simultaneously active ’local-worlds-of-thought’ or semantic spaces are indeed copresent and involved in the sense-making (interpretation) of paradoxical propositional utterances. There had to be a domain of reality where representations and things represented could indeed be copresent. There was a need for such an inclusive ’world’ or whole, making the solution to the problem possible by actually comprising, mapping, and eventually blending, these coexisting semantic wholes or

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[1] Quoted in Denis C. Phillips, "Popperian Rules for Research Design", Expanded Social Scientist's Bestiary, 2000.

[2] Especially in the light of the last year's cognitive semantics discussions at the UCSD, at the CASBS, and elsewhere in the Californian academia, as I have interpreted them.

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[3] In Mapping, Gilles Fauconnier protests energetically that the new theory is not vericonditional. I am here trying to explain why this protest should occur.

[4] Here is where vericonditionality gives way to structural semantics, at least in principle.

’worlds’; and there was a mentalistic or ’cognitivistic’ mode of satisfying it: meaning was now seen as referring to an *inner* reality, to a *res cogitans*, instead of the good old vericonditional ”out-there”, or *res extensa* — a hypothetical world of the mind. This is still the philosophical context of TMS: it is halfways analytic and halfways structural. The problem it is basically supposed to solve is *not* how the *human mind* really works, but instead how a *truth-based semantics* of paradoxical propositions is still *possible*, and how it is accessible at the price of referring to the human mind, as a Cartesian *res cogitans*, an inner reality. Therefore, TMS literature only or mainly offers applications to ’examples’ rather than to full-scale empirical occurrences, real texts or situated communications. Sense-making in the semiotic behavior of humans was not a priori — or rather not at all —what interested TMS; however, the technical solutions it developed forced it to seek ontological support in the cognitive sciences. In this sense, it is indeed ’cognitiv-istic’. But the analytic way of thinking and understanding semantics is not compatible with an interest in how the human mind really works, in so far as the mind and its cognitive semantics are not only truth-based but also based on conceptual organization.

A cognitiv-istic semantics is not automatically a *cognitive* semantics, the latter being committed to a systematic methodology of research, interacting with existing empirical studies of meaning, and subscribing to scientific realism and naturalism. It is instead mainly and primarily concerned with the mere *possibility of representation*. The way humans really *do* represent is then a secondary matter. The main difference between a cognitivistic and a cognitive approach is thus that the former intends to *justify* the semantic paradoxes — by showing that they are still *in principle* meaningful — whereas the latter implies a full-scale study of their *reality*, including discussions of the real structural and functional grounding of cognitive and affective productions in the architecture of the socially embodied human mind and of its pragmatic and semiotic dispositions. Analytic cognitivism — the historical origin of MST — is essentially a philosophical representationalism. By contrast, cognitive semantics is the study of how representational meaning can be modelled andrelated to the mental and the experiential world.

A ”mental space” is one thing in the perspective of justification and something quite different in that of exploration. In the former, it is a new form of reference, whereas in the latter, it is a semantic phenomenon of a new kind, which seems to be responsible for a host of strange and hitherto enigmatic occurrences. This is where my own research is going — albeit often unaccompanied. My point is, however, that historically, the notion of mental spaces emerged in an analytic context and was developed in a fascinating but ambiguous cognitivistic literature before it could be — if in fact it is to be — interpreted as a cognitive notion and recognized as a significant contribution to contemporary research on mind and meaning. In this case, as in the case of speech acts and performativity, analytic philosophy has if not made then at least inspired a substantial contribution to a scientific debate in which it did not participate.

2. So what is a mental space?

In the theoretical perspective of an exploration of cognition and meaning, a mental space is not a genetically modified possible world, intended to influence analytic conversation. It is a real semantic unit that on a specific level of real mental processing significantly integrates other important semantic units of that same level or of underlying levels. Sensory processing lets us perceive forms, or qualia, and further processing lets us perceive objects; configurations of objects are further conceptualized in such spatio-temporal connections to the cognizer that they are experienced as existing in situations relevant to this cognizer. These situational units are complex semantic wholes that orient linguistic and gestural syntax (grammar). They are not only cognizable but also communicable and, hence, re-cognizable. They constitute the basic imagery that make it possible for us to represent items: forms and objects, events and states, instead of just experience them and 'present' them to others. They are universally shaped as finite, or local (not infinitely extended) spatial and temporal wholes, bounded by the span and margins of our attention; and they can additionally be compared to scenes performed on the stage of a theatre, in a play including or excluding ourselves. These theatrical wholes are mental spaces. Objects, or lists of objects, are not per se mental spaces; a color, a sound, a feeling, or the contour of a cup, are not per se mental spaces. They are preparatory perceptional integrations. But situated wholes are. Human memory is theatrical in the sense that it predominantly operates on information from this level of integration. The cognitive TMS — CTMS — is thus a part of a theory of real mental architecture, and it explores the ways in which mental spaces further integrate when real higher-order meanings are built, beyond these situational mental contents, through processes involving what we call blending; reflections, notional meanings, such as those appearing in causal descriptions of events and changes, narrative accounts of intentional doings, normative comparisons and judgments, etc.

Beyond the reflective level of mental space blending, or perhaps as its generic background, we find the larger units called semantic domains — a curious hierarchy of 'regions in being' that metaphors react decisively to, and from where our minds take their dynamic schemas in order to make sense of spaces and blends.

The finite ’mental spatiality’ of mental spaces is perhaps a natural product of the mind’s own design. It allows the individual to interact not only with the surrounding pheno-physical spatiality but also with other individuals, and — as a particular side-effect — to ’think’: under certain circumstances and on certain conditions, to hold other mental spaces present in consciousness in addition to the one representing the present, and then to let active arrays of out-of-presence mental spaces generate meaning relevant for the present. Beyond the level of represented situations, the architecture of our mind may thus ’blend its way to abstract thinking’, to discourse-based or symbolic reflection.

This view no longer emphasizes the mere plurality of MS and their mappings as such, but rather draws attention to the existence of a specifyable semiotic syntax of spaces and space types — tentatively termed: networks of Base space, Presentation sp., Reference sp., Relevance sp., Figurative blend, Signifying blend (final meaning of a network), etc. — and then allows us to focus on the morphodynamic schematizations that these networks make our minds accomplish (according to linguistic or other semiotic data). The study of these networks is particularly interesting when it leads to the discovery of new, active cognitive schemas — sort of short scenarial programs that Figurative blends attract, and that in return appear to ”seal” these blends and to ”fertilize” them (as if they were eggs), and let them become meanings, communicable ideas, thoughts, manifestable messages, proverbs, examples, parables, etc.

Furthermore, this view draws attention to the principles of ’space building’ as such. ’Space builders’ are signs appearing in a Base space and signifiers of the type of space the cognizer is supposed to set up. How many such types of delegation of our attention from space to space are there? What spaces can we build? In language, these problems are related to those related to the existence of variable structures of enounciation — phenomena that we are only beginning to understand. It might be the case that a short list of space delegation types, including 1) spatio-temporal delegation, (ex.: "last year, in Marienbad..."), 2) modal delegation (ex.: "it is probable / possible / impossible / required / preferible / convenient / convened / etc. / that P") and 3) explicitly representational delegation, such as fiction and other setups created by "according-to-X"-expressions, will turn out to be exhaustive; however, these fascinating semantic questions are still poorly elaborated.

The connection of MS networks to the perhaps highest level of mental organisation and integration, that of affect, above all levels of reflection, which it integrates, is a connection reactivating the cognizer's embodied patterns of experience and expression (moods, emotions, volitive passions and commitments). The mind in fact only seems relatively 'disembodied' on the underlying, intermediate levels of integration, but neither in the initial, sensory, nor in the final, agentive stages of meaning, where direct physiological and motor embodiment are inherent and manifest.

The connection of these architectural articulations to language is still to be explored. The basic "syntactic" structure of MS networks may be a prefiguration of sentence syntax, and a prerequisite for the transformation of direct phenomenological, 'athetic', experiential meaning into propositional meaning. Linguistic meaning may use all levels of mental architecture and thus express their transversal coherence. Language is of course based on the bodily coincidence of the highest and the lowest levels of meaning processing in the proprioception of speech, writing, singing, signing, etc. It shares this base with the behavior we now call art.

3. How mental is a mental space?

My contribution to this discussion will ideally include two technical discussions, A) on metaphor, B) on fictive debates.

In (A), I will use the following — not particularly challenging — comment by a renowned literary critic:

> It is maddening to read seven hundred pages of such suppositional "biography." Throughout this book, the ground of fact becomes obscured entirely by a deep layer of speculative quicksand.
>
> Helen Vendler, The New Republic June 10, 2002, p. 34, on Painted Shadow by Carole Seymour-Jones

The network accounting for the beautiful construction: ...the ground of fact becomes obscured entirely by a deep layer of speculative quicksand is to be considered. Homework for the conference includes reflection on this metaphorical occurrence and suggestions for a satisfactory analysis.

In (B), I will discuss a finding that matches Gilles Fauconnier & Mark Turner's home-made 'Debate with Kant' example, in TWWT et passim. What follows is a textual manifestation of two empirical instances of fictive debate staging Socrates and Shakespeare, respectively, in a scientific article on Theory of Mind, by a developmental psychologist:

["Perspective taking in the aftermath of theory-theory and the collapse of the social role-taking literature", by Professor Michael Chandler, University of British Columbia; manuscript, 2002, to appear in: Working with Piaget: in memoriam – Bärbel Inhelder, Ed. J. Voneche & A. Tryphon:]

> "… False belief tests, then [because they are engineered so as to create variably restricted access to facts (PAaB)], are measures of an appreciation of the consequences of ignorance, and not, as claimed [by the theory-of-mindtheorists (PAaB)], measures of the presence or absence of some possible interpretive theory of mind."

In order to better bring out this point, consider the following contrast that my colleague Bryan Sokol and I introduced in a different context:

> Imagine this. Imagine that two couples, the Wimmers and the Perners, both go to a movie. At some disadvantageous moment in the plot line of the film, one of the Wimmers goes out for popcorn. Later they end up arguing over the meaning of what they saw. By contrast, the Perners remain glued to their seats throughout the film, but also exit in sharp disagreement about what they had both seen together from certain to credits. The Wimmers, as we mean to have made plain, are in a situation not unlike that of Maxi and his mother [in a test setting previously discussed (PAaB)] who have access to differing amounts of information, and the basis of any disagreement (some might injudiciously say "different interpretation") that they might have is easily laid at the door of the fact that going out for popcorn at the wrong moment often leads to false beliefs. By contrast, the Perners, who are also in disagreement, not about some non-epistemic matter such as whether they liked or disliked the film, but about the meaning of the actors' behaviors, closely approximate the kind of ideal test case we are looking for. They both have equivalent access to the "facts," they sharply disagree about the meaning of their common experience, and their disagreement has real epistemic content—that is, their

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> disagreement is about what they hold out as matters of fact (rather than about some matter of taste or personal preference), and they are prepared to back their different claims by bringing out evidence in support of their 'interpretations' (Chandler & Sokol, 1998).

Again, elsewhere, Jeremy Carpendale and I (Chandler & Carpendale, 1998) attempted to make much the same point by sharing some of our fictive correspondence with different historical figures:

This is us trying to sell such a limited bill of fare at the Old Globe:

Dear Bard,

A quick plot suggestion for your next light comedy. What about having some dark Moor stumble around in ignorance because a handkerchief that he left in one container was, unbeknownst to him, moved to some new location while he was off fighting the Turkish fleet.

Best,

M.C. & J.C.

Dear Drs. C & C,

Many thanks for the suggestion, but wouldn't it be altogether more interesting and true-to-life if circumstances could be devised so that much the same chain of events could be shown to read one way to anyone secure in their affections, and quite the opposite way if one's well of certainty had been somehow poisoned by the green eyed snake of jealousy?

Sincerely,

W. S.

Or:

Dear Socrates,

Just to let you know that modern social science has gone on to demonstrate that the real reason that the world is understood differently by different people is that while some have all of the relevant facts at their disposal, others are still living in ignorance.

Best,

M. C. & J.C.

Dear Drs. C & C.

Your analysis has obviously fallen into error because, while intrusive experience may be like a signet ring and people's minds not unlike waxen blocks, it is also the case, as I have undertaken to make clear to my young colleague Theaetetus, that "in some men, the wax in the soul is deep and abundant ... and so the signs that are made in it are lasting, because they are clear and have sufficient depth ... it is a different matter [however] when a man's 'heart' is 'shaggy' or when it is dirty and of impure wax; or when it is very soft or hard ... for then the impressions have no depth. All such people are liable to false judgments" (p. 329), not simply

because they are more ignorant than others, but because they are differently struck by what amounts to the same facts.

Sincerely,

Socrates

(Chandler & Carpendale, 1998)

What is perhaps common to these two thought experiments is their obviously shared commitment to the view that the contemporary theories of mind literature has very likely gotten off on the wrong foot by being far too ready to equate simple false belief understanding with the more demanding idea that knowledge is an interpretive achievement."

Enounciation: After the imaginary Wimmers and Perners illustration, it is obvious that in the fictive correspondence with Shakespeare and Socrates, M.C. & J.C. do not express their own view but instead take on the attitude of their opponents; and that the two canonical authorities invoked — one from literature, the other from philosophy, neither from psychology — both ”win" the debate. How would we account for this construction in terms of space networks? One the one hand, M.C. & J.C. are playing the role of their opponents, and on the other, S. or W.S., is playing M.C. & J.C.'s role! The involved, rather theatrical two-story representation activates two different schemas, corresponding to different, simultaneously active instances and meanings of role-playing. The resulting network will demonstrate the importance of theatrical behaviors in deliberative cognition (such as scientific debate), and its technical configuration will hopefully show the effect of an improved modelling based on a commitment to the exploration of real semiotic data and on a cognitive concept of mind.

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Blending linguistics and cognition: a methodological critique

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> Pooh began to feel a little more comfortable, because when you are a Bear of Very Little Brain, and you think of Things, you find sometimes that a Thing which seemed very Thingish inside you is quite different when it gets out into the open and has other people looking at it. (House at Pooh Corner, A.A. Milne, 1928, possibly after Wittgenstein, Russell, or Carnap; Pooh couldn't recall).

> The idea the mental representations have syntactic properties is at the heart of the nexus between rationalist psychology and the computational theory of mind. (Fodor, 2000 p. 20)

> What then are syntactic properties? (or, what are syntactic properties properties of? Think of " 1 + 1 = 2".

> Puns remind us both of our mastery of language and of our lack of control over language: this is their primordial ambiguity. We are always in danger of punning. (Redfern, 1984, p.123)

> A woman needs a man like a fish needs a bicycle. (Feminist slogan)

Part 1: Thingish things inside you

> Pooh began to feel a little more comfortable, because when you are a Bear of Very Little Brain, and you think of Things, you find sometimes that a Thing which seemed very Thingish inside you is quite different when it gets out into the open and has other people

> looking at it. (House at Pooh Corner, A.A. Milne, 1928, possibly after Wittgenstein, Russell, or Carnap; Pooh couldn't recall).

Conceptual Integration theory (C.I.) claims to provide insights into how the mind works based on the creative ways by which humans combine linguistic elements in speech and in written language forms. Whether the model is useful for explicating regularities or describing the range and limits of grammatical forms that are found in natural language use, is not my interest today. Instead I want to examine what possible relationships could obtain, in putatively explanatory accounts, between linguistic (especially semantic) and other, non-linguistic, cognitive phenomena.

To explain, to interpret, and to analyse (describe the elements that comprise) an utterance are not methodologically the same. The last may be necessary as part of the two former processes, but *explanation* requires precise explanandum statements that would allow one to decide when well-defined explanans statements were sufficient to explain (e.g. imply) the phenomena described in the explananda.

I will concentrate on the *post hoc* and *ad hoc* nature of explanatory arguments that are found in the blending literature, and assert that Gibbs (2000) criticisms have not been met by proponents of blending theory, not even, or especially, by postulates like "disintegration". Like Gibbs, I argue that C.I. "explains too much". I will discuss some of my own whimsical examples and some that are typical of the literature.

In their defence of C.I. against the methodological criticisms made by Gibbs, Coulson and Oakley (2000) acknowledge that, initially, the theory, like all inchoate or embryonic models, relied on *post hoc* postulates. They "...note that most fruitful theories of meaning begin with this sort of analysis" (p. 192). They also defend the "model of on-line meaning construction" against the charge that its postulates are largely *ad hoc* (by which I would mean arbitrarily invoked to "save" the model against examples that seem to violate its postulates):

> Blending theory is really an interpretive model and its strength can be assessed by how well it treats disparate events in a principled way. What is variable is the contexts and situations in which blending is thought to occur in this respect, ad-hocness is good, because a principled interpretive model (...) that focuses on variability renders important insights, especially when trying to scale the microstructures of meaning to their macrostructures of the real time online situation" (sic, 192-3).

This strikes me as an odd defence. It makes only very weak claims for the model ("blending is thought to occur"... it is "really an interpretive model", ...it "renders insights").

To put my criticism most provocatively, Astrology is also an *ad hoc* interpretive model that is nevertheless claimed by many to explain psychological phenomena. It invokes putatively causal regularities, and links "macro" events to "micro" events, all in the name of "interpretation". But it is **not explanatory** because it can only argue **circularly,** so its *ad-hocness* is entirely vacuous. No evidence is educed for the various (vague) explanans that is independent of the explananda. The movements of the earth and spheres are invoked only after, and in verbal consistency with, the fortunes of the earthlings who trust its prognostications and interpretations. *Ad hoc* postulates (if they are only claimed to be interpretive) need to be formulated so that they can be compared with alternative hypotheses. They should be **falsifiable**, in principle, otherwise circularity will result (Bell and Staines, 2001, ch. 3 discusses Gestalt theories of perception and explanations of visual illusions according to these criteria).

I would propose that C.I. requires specification of the precise linguistic regularities (morphological, syntactic, rhetorical/figurative) and of the *independently identifiable* cognitive processes by which the various blends, integrations, disintegrations, etc, are interpreted (e.g. by "projections of mental spaces", as integrated concepts, or integrated properties of concepts, etc). Then the latter processes would need to be used to predict the nature and limits of their resulting linguistic "products" under specifiable conditions. If the postulated cognitive bases are to be explanatory of (sufficient for) predicting the qualities of the resulting (?) blend(s), they need to have implications for the properties that would be realised in other linguistic examples and perhaps in semiotic phenomena more generally. This would, of course, assume the precise specification of contextual (observable) conditions under which the kinds of linguistic forms predicted, would be realised.

My view is that these contextual conditions are just that: contextual conditions in the sense proposed by Systemic Functional Semiotics (Halliday, 1985; Kress and van Leeuwen, 1996). They would include the functional/ purposive contexts a particular utterances and this must include the actual properties of events, objects, processes, settings being represented in the utterance or locution being analysed. I would argue that the contextual determinants and constraints on "blends" are also interpersonal and compositional, modally specific, and in these ways, culturally expressive. Insofar as "blending" semantics is formalist, it ignores the empirical contingencies "outside the head" of the speaker, and, I believe reifies these as explanatory cognitive processes. This is not to deny that all semiotic acts involve metaphor and concatenation of elements. But that is a much weaker claim and one that makes no precise claim about the sufficiency of cognition as an explanation of particular language acts.

Part 2: These are a few of my favourite blends: Some words (and concepts?) to integrate, or to un-blend: the compositionality problem.

> The idea the mental representations have syntactic properties is at the heart of the nexus between rationalist psychology and the computational theory of mind. (Fodor, 2000 a p. 20)

> What then are syntactic properties? (or, what are syntactic properties properties of?) Think of " 1 + 1 = 2".

I want to cite some apparently blended phrases and sentences. Then I will discuss a larger text, one that involves visual metaphor and irony. I will make a brief comment on each of my very disparate examples. I hope to show that these very different examples can only be thought of in terms of cognitive processes like "conceptual integration" in clumsy, circular ways.

1. "The queen of Denmark is bald" is a bald-faced lie by a bald-headed liar.

Moral: There can be no one-to one correspondence between words and sense.

But all linguists know that, so consider:

2. Pet fish / Fish pet (in Australian English this would be "goldfish/ gold fish).

Jerry Fodor (1998) discusses this deceptive example:

> Consider such concepts as PET FISH, MALE NURSE, and the like. You can't derive the PET FISH stereotype from the FISH stereotype and the PET stereotype. So, if stereotypes were constitutive of the corresponding concepts, having a grasp of FISH and of PET … would not suffice for having a grasp of PET FISH.

Keeping the fish in mind (or was that pets?), what is the cognitive basis of logical conjunctions? And what differentiates

3. Pet or *fish; Pet* and *fish*?

What would one postulate as the mental spaces projected (other than *ad hoc*) for the phrase *fishy and petty* (as in *"That claim is fishy and petty"*)?

Things get worse if you combine, blend, or compose a complex of two simple concepts but ignore their contexts:

4. Monkey business has got little to do with *Business monkey*, so the intersection of mental spaces for each constituent would not help in unraveling the possible semantic uses to which each could be put.

Fodor cogently argues against the "compositionality" of concepts, showing:

> What's a satisfier for a complex concept depends on what's a satisfier for its parts; but what's a good instance of a complex concept doesn't depend on what's a good instance of its parts. Why should it? What's a good instance of a concept, simple or complex, depends on how things are in the world… How could you expect semantics to know what kind of fish people keep for pets? (p. 43).

I conclude from my crazy examples that when what seems like a "blend" is analysed or interpreted, it does not follow that the process which caused it has been described. Hence: a different explanation and analysis of the constituents would be needed to explicate "monkey business" and "business monkey", not just because they could be ambiguous even in given contexts, but because no non-trivial description of the constituents could be given which did not involve their communicative and real-world contexts. As these phrases could not occur except in actual utterances by real people, the *causes of each would be situational and cultural and linguistic as well as cognitive*. Indeed, the cognitive determination of each would appear to be rather trivial (i.e. a necessary but not a differentiating condition, as the words in each phrase can be commuted and the utterance still need non– cognitive explanation (or at least explication).

A few more jokes related to my unconscious storehouse:

5. It fits like a stocking on a duck's lip

My father used to say this in a doubly ironic way: he used the expression when things actually did fit snugly.

6. *"Cotton gin"* has little to do with *"fluffy martini"*

7. *"My wife's got a bun in the oven"* has little to do with cooking.

And while we are talking about women and figurative language which is used to avoid speaking in ways which violate taboos (the motivation for at least some jokes if you believe Freud, as I do), consider an advertisement for American Airlines published in the late 1960s:

8. "*Think of her as your mother*": see transparency

Note: you need to know this is an advertisement to read it appropriately. Second, the verbal text interacts with the image text. It is ironic and asks the (male?) reader to think of the "air hostess" (as she was called at the time) as providing sexual, not maternal comfort. Semantically, and I would think, in terms of the other semiotics of the text (its interpersonal address, its thematisation by left-right lay-out etc), the text means more than could be reduced to its constituent elements, either linguistic, or cognitive.

If ambiguity is a matter of interpretation and if Conceptual Integration theory is an interpretive, not an explanatory, theory, then is ambiguity non-trivially analysable in non-linguistic, cognitive terms? To put this crudely, do you have to do different things to understand an ambiguous sentence (remember that "flying planes can be dangerous") or is the ambiguity "in" the text-world relationships rather than principally or only "in" the mental concept-text relationships?

Part 3: Levels of integration and disintegration (Or, where are William of Occam and Winnie the Pooh when you need them?)

One conclusion that can be drawn from these examples is that linguistic composition or concatenation is *not ruled by any precisely restrictive principles of cognition* as such.

Second conclusion: *context is all important:* one, non-linguistic context (the way things are put together and occur in the world, outside the head, so to speak); two, the purposive or functional context of the particular utterance or locution (its communicative context); and, three, its specifically linguistic (conventionally coded (partially) syntactic) context (e.g. word order rules for adjectival modification).

Third conclusion: The *hypostatisation* of a cognitive level of conceptual determination of the semantics of natural language expressions involves *ad hoc* circularity. It seems to multiply theoretical entities unnecessarily. Things may seem very thing-ish inside you or your theory, but they can become rather idealist "when they get out into the open and have other people looking at them". (Thank you Pooh).

In my concluding discussion I will focus on recent attempts to complicate blending principles by proposing a role for cognitive "*dis*integration".

Recall the question posed by Fodor: "(W)hat then are syntactic properties? (or, what are syntactic properties properties of"?). This question becomes problematic when unrestricted textual forms are seen as the result of cognitive integration and therefore as semantically distinct. When "stories" like "someone kicking a ball" or "something disappearing" are analysed in the same cognitive terms as the Riddle of the Buddhist Monk (Fauconnier and Turner, 1998, Bache, 2001), or as metaphorical and punning constructions (like my examples), and then "grammar" is claimed to result "from the projection of story structure" (Turner, 1996, p.141, in Bache, 2001, n. 8) Fodor's question becomes highly pertinent: Are syntactic properties properties generated by the semantics of "stories"? Of the cognitive projection of "stories"? Of the real events or situations they refer to? Is there a limited way of telling stories once a language has a "subject-verb-object" structure? How does grammar based on semantics develop? (think of childhood, pivot-open class grammars, for example? (Gopnik, *et al*, 1999.)

The *ad hoc* inelegance of the Blending and Conceptual Integration model is patent in recent attempts to introduce more and more postulates to save the theory from embarrassing counter examples. Just as Chomsky's models of deep and surface structure proved to be psychologically implausible, if only because they seemed to ignore the representational and semantic work done in making an utterance, so the postulation of additional processes like "disintegration" (Hougaard and Bache, in Bache, 2001) merely compounds the psychological or cognitive problems of the original C.I. model. There seems no limit on the number and kinds of cognitive processes and levels that might be needed to analyse complex examples if one ignores alternative, functional and contextual determinations.

For example, "(T)he projections from the inputs to the blend is typically partial" (quoted from the figure on the conference web-page, no less). Not all elements from the inputs are projected to the blend. The linguistic question raised for me is: which "elements" are salient to syntax?

Cognitively, are the same elements "projected"? If so, is this circular? If not, why not? Is the partial projection claim just another way of saying that all perception is "aspectual"? We code and/or attend to features or qualities of representations or of perceptions of the world that are pertinent to our communicational needs and purposes at a particular time. We cannot communicate or attend to everything at once. What we do attend to and encode or enact is very heavily constrained by the situational context and the linguistic registers that are relevant to making an utterance.

The three principal kinds of operations involved in blending are listed in the conference summary as:

composition, conceptual or semantic(?) mixtures and compounds, if I read this correctly;

completion, which sounds like Gestaltism, but of which modalities? Patterns and frames seem too abstract and general to be realizable in all modalities, as would be required by blending theory;

elaboration: conceptual implications (other concepts?).

This sounds like an attempt to explain "emergent" structure, the peculiarities of created phrases, sentences, etc that are not merely "additive" versions of their constituents. Yet just what phenomenon is to be explained in C.I. is frequently unclear. I would argue that the explanandum ought to be a syntactically organised unit of meaning (a "text" in context, to use Halliday's locution), not another cognitive structure. Otherwise, blending principles could not map "conceptual structure", "knowledge" etc onto realized semiotic units (to make utterances, texts etc) which is surely the purpose of the cognitive postulates in the Turner and Fauconnier model.

Nor does it help, I believe, to postulate *disintegrative* cognitive phenomena. So, let me turn to the recent proposal by Hougaard and Bache, the Disintegration Hypothesis, which they summarise as follows:

> Disintegration is a necessary precondition for conceptual integration It is present in both perception and cognition, where it enables us to handle experience constructively in terms of fragments appropriate for all sorts of categorizing and blending purposes (Bache, 2001, n.22).

I cannot understand what "disintegration" could imply about "perception". It is true that we analyse, say, ambiguous figures like the Peter/Paul goblet or Escher's spirals in "local" and in "global" ways. But we do not seem to break the figures down into their constituents and then build them back up again at a different level, so to speak. We may talk about the colour only of a red square, or speak of the fish only, in reply to a question about a pet fish. But what is cognitively *dis*integrated to allow the syntactic organisation of the resulting utterance to yield its particular semantics?

The authors continue what I see as their adhoc-ery by multiplying the "levels" that are involved in (pre-linguistic?) cognition:

First-order blending turns fragmentary perceptual units into conceptual wholes. Higher-order blends presuppose the disintegration of these conceptual wholes into structured patterns of mental fragments. Grammar is the result of the projection of such patterns. *The constructive alternation of integration and disintegration, rather than (each?) simply viewed in isolation, is thus a major factor distinguishing humans from other primates* [my emphasis, P.B.].

So, this looks like a model in which certain cognitive capacities for linking, blending and un-linking and disintegrating elements of perception and cognition are causally relevant to the particular ways in which humans construe and communicate about the world in grammatically complex texts (presumably, linguistic texts, but why not in other modalities?).

One problem that arises here is just what such "fragmentary perceptual units" are? Are they elements of particular perceptions? What are the implications of the problems to "disintegration" posed by Fodor's Pet Fish and by my other examples (above)? *Aspects, elements, frames, properties* - all seem to lack any independently discernible existence apart from the linguistic phenomena they seem to explain. This is the essence of the criticism of circularity that I am making. The cognitive principles *rule nothing out*. They offer plausible interpretations (!) only after the event.

Part 4: Of fish and bicycles

Freud's dreamwork posits two principal axes of ideational composition: metaphor (condensation) and metonymy (displacement). These look rather like the two "structuralist" axes proposed by de Saussure: the paradigmatic and the syntagmatic (though I'm not so sure). But where are they? In people's minds? In the language when it is thought of as an abstracted cultural resource? What about those other systems with which we think? Mathematical symbols (what is the "mental space of "one" or "infinity", or of the "square root of two"?) Or is that computational and not conceptual? If so, see Fodor's (2000a) strictures against a model of thought that is purely "computational". And what about images? Can you do cognitive science without representation, to paraphrase Fodor again.

Many sets of elements can be identified with which people communicate and (perhaps) think (if thinking is not just communicating covertly). Some are visual, some oral/verbal. But we can mentally combine many other sensory inputs: so we might ask whether we are really *thinking* when we taste the blend of "rich melon" and "sweaty saddle" flavours of our favourite sauvingnon blanc? Or are we only thinking when we describe them verbally? Perhaps semiotic resources are *deployed* or are *the instantiation, or realisation of communicable meaning.* Perhaps digital or discrete semiotic resources are never adequate to the analogical flows of perceptions, images (imagination) and sensations. Experience is not necessarily cognitively structured in ways that can be transcoded into language, or, at least, not in ways that are analyzable "in reverse" (i.e. emergent linguistic blends cannot be "traced back" to their cognitive antecedents by following the units in grammatically structured utterances.) There is no cognitively distinct level of structure by which the syntax of our thoughts is determined, merely constraints on what counts as a well-formed syntagma in particular contexts. If C.I. is a psychological theory, it seems to be starting at the wrong place, looking into the mind for structures that exist outside it, so to speak.

Of course, people (and not earthworms or computers) deploy particular kinds of semiotic resources in particular socially-purposed actions and not others. And, although "some things cannot be said, nor can they be whistled" to paraphrase a Fodor joke, it does not follow that meanings cannot be shared or transacted within certain contexts by means of multimodal resources. This is not simply nor principally because "meanings" sit around in people's minds as "spaces" nor even as already meaningful concepts, but because situations (culturally specific and constrained) are common to those communicating, as are non-trivial subsets of the semantic and syntactic resources available in the situation. It makes little sense to internalize in cognition all the products of communicative actions *post hoc* on the basis of the fact that it is not possible to communicate anything without predicating something of something else in some modalities, and then to postulate these predications themselves as putatively causal, underlying processes. Predication does not exhaust semantically distinct communication or meaning-making (semiosis, e.g. the smiling air hostess above).

I believe, finally, that the "evolutionary" interpretation of all and sundry cognitive and linguistic capacities and their social utility, which is also popularly represented in Kopnik et al (1999) and by Plotkin (see Fodor, 1998) only compounds many of the explanatory dilemmas that models like Conceptual Integration run into. This conference poses the "origins" of "the way we think" as a question that C.I can illuminate. I doubt this. I accept most of Fodor's points about the naivety of "reverse engineering" accounts of the mind and brain. C.I occasionally seems to be interpreted in "evolutionary ' ways, but I see this as taking a very long bow indeed, especially given what I have said above.

Inside every thin linguistic model there seems to be a fat cognitive model trying to escape. Not content with the description of semiotic resources, with contextual or formalised models of meaning-making, the psychological reality of particular versions of language creativity is ritualistically claimed and proclaimed. Soon evolutionary stories are written, though by then the details of the grammar or the linguistic phenomena that enthralled the evolutionary psychologist have been lost to memory and all that is asserted is that brains work in generally cognitively adapted ways. This is then claimed to be consistent with (unsurprisingly) the general principles that linguistic or semiotic models describe. Jakobson even claimed a kind of limited neurological support for the two Saussurean axes of language.

Characteristically, the move is from cognitive "structures" (often ill-defined), to syntagma, then to "meaning", "semantics", "sense". And before long, the mind, and even the brain, moves from the footnote to the page; everywhere linguistic/semantic creativity appears: dreams do it, movies do it, even educated birds do it; let's do it: let's join the elements, mean and think. Let's have a theory of thought as condensation or as blending or as integration. But what to integrate? What are the elements? Concepts? Words? Morphemes? Images? Qualities? Mental spaces? And how many "levels" need to be postulated between the meaning and the utterances as produced? At least sometimes we hear music, not signs of music, not projected mental spaces of music; we see the bird on the wing, not a sign of a bird on the wing. I don't think multiplying cognitive postulates ad hoc will get one very far.

In the seventies, children's grammatical development was said to involve the rapid acquisition of two classes of morphemes: "open" and "pivot". Each child developed a quickly growing corpus of simple utterances composed of semantically determined word combinations. Some words combined only with some others, others were free to be uttered alone. A simple grammatical model, but what was happening cognitively here? Was it different in kind from "blending"? Or do both these very general linguistic phenomena merely show us that all sequences of semantic units are *organised* sequences of semantic units? And that this a minimal requirement for predication, and thus for communication of (informative) meaning? Maybe it is just that language use is time-based in a way that "perception" and some other cognition are not. Maybe language is uses discrete ("digital") elements, but perception is analogical, not decomposable into discrete elements tat can be "projected".

The temptation to do Psychology as a fulfillment of Linguistics is, ironically, exemplified by the Halliday-styled Systemic Functionalists (Halliday, 1985) who have recently speculated about the co-evolution of linguistic function with human brain structure. It seems that even the most functionalist Linguistics cannot be satisfied with just studying language (Bell, 2001).

The brain is everywhere today the object of interrogation where language is concerned. I want to conclude that language tells us much less about the brain and the mind than cognitivist approaches imply, the model known as Conceptual Integration included. Still, I like puns and jokes and ambiguities, so I'll end with a blend:
Linguistics needs cognitive models like a fish needs a bicycle.

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Digging One's Own Grave: Integrating Current Blending Theory and Grammatical Analysis

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Abstract

This paper concerns one of the core examples in current blending theory, the English idiom digging one's own grave. For instance, it is said to demonstrate the existence of a particular type of blend called an *asymmetric two-sided frame network* (Fauconnier & Turner 1998). However, it will be shown that there are some problems with the analyses provided thus far. Instead, an alternative solution is offered that assigns a key role to the expression's grounding in discourse and social interaction.

1. Introduction

This paper proposes an alternative, discourse-oriented account of the English idiom, *digging one's own grave*, one of the most cited examples in *The Way We Think* (TWWT). The analysis presented parts with the one offered in *TWWT* on two counts (1) it assigns a key role to the expression's grounding in discourse and social interaction, and (2) it does not consider "death causes grave digging" a conventional meaning of English[i].

The mental space framework adopted in this paper is the one developed and practiced by the cognitive semioticians at Aarhus University, Denmark, cf., e.g., Brandt & Brandt (2002). However, the analysis proposed differs from their approach/philosophy in some respects, see section 2.

The paper is structured as follows: section 2 gives a general account of *digging one's own grave* (DUG), outlining its main characteristics; section 3 offers an in-depth analysis of a typical use of the idiom which has been selected from a small sample including about 40 different uses collected from the Internet; and, finally, section 4 presents the conclusions.

2. The general account

Consider the following quotation from *TWWT* (2002: 131):

> Double-scope networks can also operate on strong clashes between the inputs. Consider the familiar idiomatic metaphor "You are digging your own grave." It typically serves as a warning that (1) you are doing bad things that will cause you to have a very bad experience, and (2) you are unaware of this causal relation. A conservative parent who keeps his money in his mattress may express disapproval of an adult child's investing in the stock market by saying "You are digging your own grave.

When the author of the present paper read these words the first time, his immediate impression, or the "image" that came to his mind, was that a parent who uses the idiom, in this context, is not merely stating an opinion of disapproval, which certainly is part of the message, but, more importantly, he or she is engaging him- or herself in an act of *mockery* or *ridicule*. That is, the only reason why the parent would choose to say this rather than, say, "I don't find that a wise decision, son!" is that he or she is making a serious attempt at *persuading* the adult child not to invest in the stock market. This reading appears to have the following consequences for a general characterization of the idiom's use (i.e. its general meaning): it involves not only (1) **metaphor**, but also a certain degree of (2) **ridicule**, in the way it serves as (3) a **response** to what the referent, i.e. the subject-agent, has either said or done prior to its use—which, by definition, makes this saying or doing part of the idiom's semantic characterization (see Langacker 2001).

In regard to the second point, i.e. the idiom involving a certain degree of ridicule, the approach taken here relies on Sperber and Wilson's (1995) notion of *echoic* language:

> How do interpretations of someone else's thought achieve relevance? In the best-known case, that of 'reported speech', they achieve relevance by informing the hearer of the fact that so-and-so has said something or thinks something. In other cases, these interpretations achieve relevance by informing the hearer of the fact that the speaker has in mind what so-and-so said, **and has a certain attitude to it**: **the speaker's interpretation of so-and-so's thought is relevant in itself**. When interpretations achieve relevance in this way, we will say that they are echoic, and will argue that ironical utterances are cases of echoic interpretation.
>
> (Sperber & Wilson 1995: 238)

In other words, if the parent's expression of disapproval involves ridicule, then how does this ridicule become part of its meaning? Put simply, by using DUG the parent informs the hearer, the adult child, that he or she has in mind what so-and-so would say, or what so-and-so's opinion would be, given the present circumstances. But, *whose* thought is the expression actually echoing? It is not echoing a precisely attributable thought but rather the thought of people in general (Sperber & Wilson 1995: 238). Consider also the following quotation from Sperber & Wilson (1995: 239):

> By representing someone's utterance, or the opinions of a certain type of person, or **popular wisdom**, in a manifestly sceptical, amused, surprised, triumphant, **approving** or reproving way, the speaker can express her own attitude to the thought echoed, and the relevance of her utterance might depend largely on this expression of attitude.

In order to see how this works, a closer examination of the idiom's metaphorical 'content' is required.

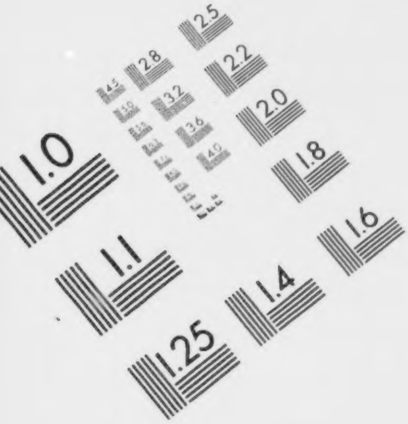
The initial task faced by the hearer is to recognize the expression as a genuine instance of DUG, since the same linguistic form can be used non-metaphorically, as in the following comment by an American movie critic on "Mickey Blue Eyes"[ii],

> When Michael [Hugh Grant] tries that all-important phrase "Fuggedaboutit," he sounds like Arnold Schwarzenegger's geeky brother. It's about as funny as digging your own grave in an unmarked part of New Jersey. [iii]

This recognition always seems to involve setting up a **Semiotic space**, i.e. the space in which the two input spaces associated with the source and target of the metaphor are invoked, with the following, general properties: (i) two obligatory participants located on-stage, Speaker 1 and Speaker 2, (ii) a real or virtual audience located off-stage, and (iii) the identification of one of the participants as the subject-referent of DUG, say, Speaker 1. The third property has two implications: (1) regardless of whether "Speaker 1" has actually said something or not, his or her acts are automatically interpreted as (a) semiotic act(s), and (2) Speaker 2's use of DUG is per definition *directed at* Speaker 1 (who is the object of ridicule), and *intended for* an addressee located in the audience. In regard to the second property, (ii), it is worth noting that if no actual audience can be identified, a virtual audience is projected from the blend—more about this aspect of the idiom below. Finally, in regard to all three properties, it is worth noting that they may, or may not, constitute a shift in the hearer's perception of the current situation[iv].

Having established the Semiotic space, a topic space, the **Reference space**, is set up in which the information that is associated with the target domain of the metaphor is invoked. In a general account, it is only possible to say that the mere identification of the subject-referent as part of actuality[v] suffices to trigger its construction; and that if the referent is linked with other pieces of information either established in the preceding discourse or activated from memory, then this information is likely to be invoked in this space as well. Typically this information includes a repetitive type of event the individual actions of which are assigned a positive value by Speaker 1. When these actions are reported by Speaker 2, who assigns a negative value to them, they normally tell you something about the character of the subject-referent. This point is elaborated in section 3. To handle the information associated with the source domain of the metaphor, i.e. grave digging, a **Presentation space** is set up. This space contains a type specification, viz. that of grave digging, which has two unfilled roles, an agent role and an action, or event, role. Note the only connection established between the Presentation space and the Reference space at this point is the subject-referent who is expected to fill the agent role. The initial, or primary, mapping between the Reference space and the Presentation space triggers the construction of a **Blended space** (or Virtual space) into which the new hybrid structure is projected. In this space the referent event, i.e. the actions associated with the subject-referent, is presented *as if* they were an instance of grave digging. Note the idiom's canonical tense, the present progressive, strongly suggests that an essential part of its meaning is determined by a mapping of events.

In fact, both the use of the present progressive and the possessive modifier *own*, respectively, constitute strong linguistic cues to the fact that a GLOBAL VIEW and a LOCAL VIEW are mapped. As regards the progressive construction, consider the following definition offered by Langacker (1999b: 248):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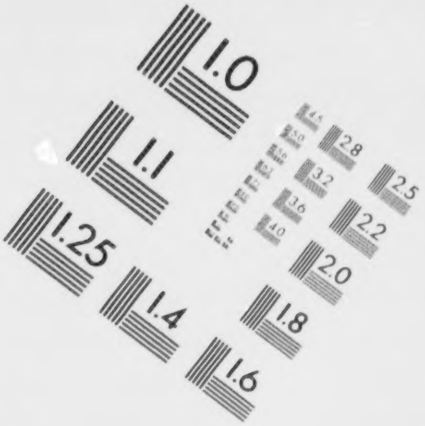
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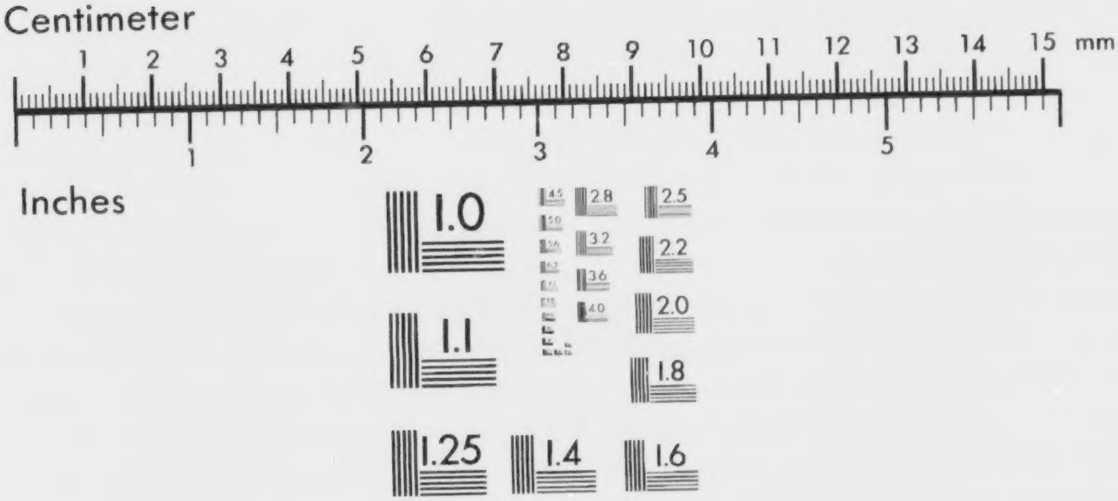
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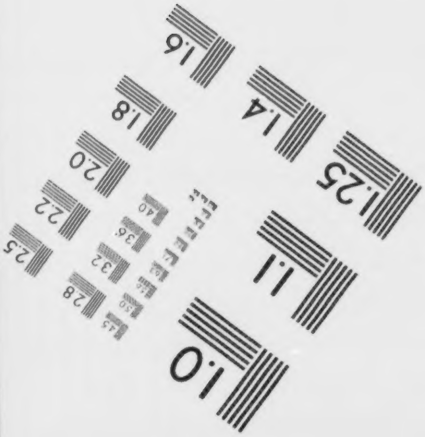
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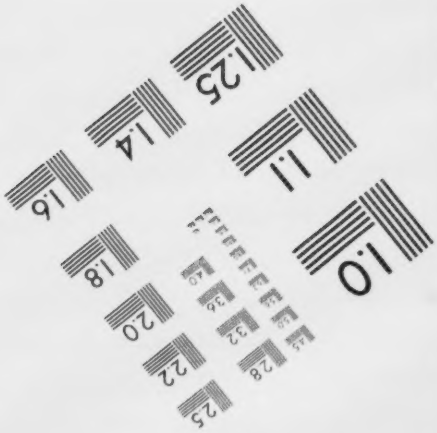
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> The progressive construction derives an imperfective process [local view] from a perfective [global view] by imposing on the latter a more restrictive immediate scope that excludes its endpoints. The processua profile is necessarily limited to what appears in the immediate scope, and the progressive construes it as being internally homogeneous.

As regards the possessive modifier *own*, it appears always to involve a mapping between a particular background assumption and a situation that contradicts that assumption whenever it is used in the POSS.PRO. *OWN* NP construction [note: not unlike the *safe* beach example in *TWWT* (2002: 25-27)]. Either the background assumption or the situation contradicting it is associated with a particular norm. This norm involves a global view. Consider the following three examples, all involving mono-transitive constructions:

(1) Peter is cooking his **own** dinner,

(2) he faked his **own** suicide.[vi]

(3) in which each party smokes (his **own**) cigarette in close proximity to the other.[vii]

The first clause could be uttered by someone who knows that Peter's mom normally cooks for him. That is, Peter's action, on which Peter is likely to take a local view when the clause is uttered, is interpreted as contradicting what is conceived as either a norm or people's expectations in general [global view].The second clause is uttered by a gangster in a novel. In this case, the local action of faking a suicide is to be understood against the norm, or general expectation, that gangsters typically murder people and make it look like a suicide [global view]. The third clause is part of an explanation of why the following sentence, "(37) He asked if I'd join him in a cigarette" is normally interpreted as involving two cigarettes rather than one. In this case, the local expectation that the clause could be interpreted as only involving a single cigarette is negated by our general knowledge of joining somebody in a cigarette [global view]. More on this point follows below in sections 3 and 4.

In order to establish in what sense the event(s) with which the subject referent is associated is to be understood as grave digging, a relevant framing of the target space is required. This framing, in turn, guides further mappings between the inputs and motivates the selection of projections to the blend (Brandt & Brandt 2002). Evidently, a relevant framing depends on the idiom's use. Hence, in a general account, it suffices to say that the topic is closely related to the (local) events identified in the Reference space, and that these get compressed into the iterative (and homogeneous) action of digging which itself is a salient part (especially if the present progressive is used) of the grave-digging scenario. The adoption of the grave-digging frame, in turn, due to its telic character, provides the hearer with a global view since it supplies the homogenised, local actions mapped from the Reference space with a common result, or outcome. The relevant framing is invoked in a **Relevance space**, which is set up for this particular purpose, and from which an elaboration loop runs through the Reference and Presentation spaces to the blend, represented by dotted lines in figure 2, below. This elaboration loop keeps running until a relevant schema, which structures the blend, is recruited in the Relevance space. This schema establishes the metaphoric meaning intended by the expression. The general schema recruited for DUG is called **Reality blindness**, and it is defined thus: **Lack of optimal vision may have negative, if not fatal, consequences**. In this context, *vision* is given a rather broad definition, including both literal as well as metaphorical notions of seeing, such as, e.g., instances covered by the conceptual metaphor, "Understanding Is

Seeing", *It looks different from my point of view*; *Now I've got the whole picture*… (Lakoff & Johnson 1980: 48). Yet another example is "stubbornness" which is "not wanting to see" — which is often an essential part of the message communicated by DUG. One of the main reasons the reality blindness schema is recruited is the clash between the global and local views already established by the initial mapping, see above. This leads back to one of the claims made earlier, namely that if no actual audience is identified in the Semiotic space, a virtual audience is projected from the blend. This occurs, it is argued, because when an assumption of reality blindness is communicated, then, by default, an assumption of a shared, intersubjective conception of reality is communicated as well. This not only explains how the idiomatic expression in general gets its rhetorical power, but also how the conservative parent, mentioned in the *TWWT* example, attempts to persuade the adult child not to invest in the stock market. Furthermore, since (a) ridicule normally requires an audience and (b) "not seeing" is conventionally associated with **stupidity**, given an appropriate framing, of course, the reality blindness schema is also able to explain this aspect of the idiom's meaning.

However, three things are missing from the account outlined so far: (1) how does the subject-agent end up in the grave (dead), (2) what is the force-dynamic (FD) content of the schema proposed, and (3) how does the projected death mentioned in (1) get linked to failure?

In answer to the first question, it is proposed that a semantic scale of harm is invoked in the Relevance space as part of the reality blindness schema. At one end of the scale, there is no harm and at the other, death. As suggested by Sperber & Wilson (1998), the relevant point on a scale is determined by its contextual effects[viii]. That is, in respect to DUG, it is difficult to see what would make any intermediate point on the scale relevant. In fact, only the negative endpoint, death, seems to provide a contextual effect in that it allows the expression to be interpreted as an instance of hyperbole. At the same time, the correlation between the point of completion of grave digging and the point of death provides the hearer with a temporal point at which the subject-referent can be said to be *in trouble* — a perception of the situation which arises as a result of the more realistic amount of harm projected to the Reference space. Similarly, the assumption that 'death' is the most relevant point on the scale is supported by the fact that 'death' is conventionally associated with 'failure', as pointed out in the previous analyses of DUG [*TWWT* (2002), Coulson (1997)]. But, in this context, it is worth noting that the hearer should be able to identify, or infer, what 'failure' is referred to in the Reference space, and with which the subject-agent can be associated, in order for the metaphor to work. This answers the third question. In answer to the second question, what is the FD content of the schema proposed, the following is proposed:

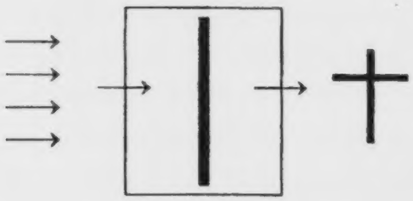
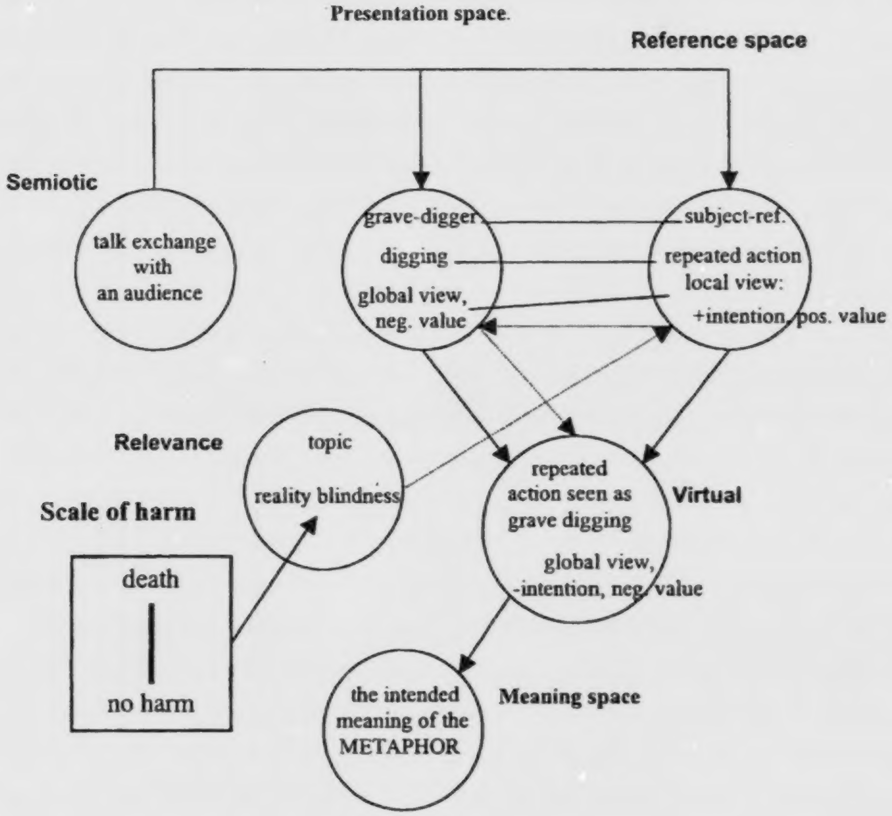


Figure 1

Some weaker force acts on a stronger force, a barrier, until that force is eventually overcome. Not surprisingly, this FD schema is consistent with the one associated with grave digging. In the case of grave digging, the weaker force acting on a stronger force is the grave digger and the barrier to be overcome is the amount of sand, stone etc. that has to be dug in order for there to be hole in the ground that can be characterized as a grave, with the right depth, etc.

The general account proposed is diagrammed in figure 2 below: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Reference space
Semiotic
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grave-digger
digging
global view, neg. value
subject-ref.
repeated action local view:
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Relevance
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reality blindness
Scale of harm
death
no harm
repeated action seen as grave digging
global view, -intention, neg. value
Virtual
the intended meaning of the METAPHOR
Meaning space

Figure 2:

3. Emotional abuse

The analysis presented in this section concerns a message written by a mother to the bulletin board of a discussion forum called "Abuse" on a homepage addressing issues related to child custody. The mother's message concerns "emotional abuse":

> Re: emotional abuse
>
> From: a loving mom
>
> Time: 05:49:27
>
> How can you prove this in court? What rights does a 13 year old boy have? He doesn't want to be around his step mother and only wants limited time with his dad? He is in counciling for depression. His dad and his wife are always calling my son a liar, telling him everything is his fault, they take everything away from him and always try to find a "good" reason for it. He has been grounded over there since Nov 8 2001 for his report card in the first quarter. His dad is always telling him how much better at sports he is then my son and putting him down for trying. If I tell him to stop he gets upset. In everything my son does he isn't good enough. His wife stood in front of me and told my son that he was worthless and told me he should be worthless to me too and his dad stood there and cheered her on. She always tells him "you better watch it now, because now your dealing with me." What is that supposed to mean? My son is starting to hate his dad and I try to prevent it but **he is digging his own grave with him**. (…)[ix]

Clearly, long before DUG is encountered in this message, the kind of situation required by the Semiotic space has already been set up. That is, already by the third clause, the mother has put herself, her son, her ex-husband (the father) and his wife (the step mother) on stage. In addition, both the father and the step mother whose actions are to be mapped onto grave digging, as shall be shown below, are conceptualised as speakers, e.g., *His dad and his wife are always* ***calling*** *my son a liar* … etc., The audience addressed is other parents who have gone to court and who can advice her on how to prove emotional abuse, probably in order to have her and her ex-husband's shared child-custody, or his visitation rights, revoked. In fact, this paper would argue that there is a virtual audience as well, the court in which the mother plans to present her case, since the other parents are asked to identify with this virtual audience, i.e. the future court or judge (see Langacker 1999a). So, in this case, not only DUG, but also the general message conveyed by the mother is *directed at* her ex-husband (and his wife) and *intended for* those who can identify with the virtual audience. Finally, since the father is clearly the intended referent of DUG, the third property, or requirement, of the situation invoked in the Semiotic space is met as well, i.e (iii) *the identification of one of the participants as the subject-referent of DUG, say, Speaker 1*, see section 2.

Now, obviously the father has to be identified as part of the real world, actuality—in contrast with the grave-digging scenario which is intended figuratively. This identification triggers the construction of a Reference space. Furthermore, since the father has been linked to a number of events in the preceding discourse, these are invoked in the Reference space as well. However, these events require further scrutiny.

First, on a more general level, it is worth noting that the father is made responsible of his wife's actions. Consider, for instance, the following comment by the mother, *His wife stood in front of me and told my son that he was worthless (...) and* ***his dad stood there and cheered her on***. Not only does this comment reveal that the mother thinks he should be held responsible for his wife's actions, but also that he assigns a positive value to the actions with which she is associating him, see figure 2, above. In contrast, as evidenced both by this sentence and the general topic of the message, "emotional abuse", the mother assigns a negative value to these actions (this information is likely to be projected to the Presentation space as a result of the elaboration loop mentioned in section 2).

Secondly, it is worth considering what types of actions the father is made responsible of:

(1) His dad and his wife are always calling my son a liar, *[habitual]*
(2) *[His dad and wife are always]* telling him everything is his fault, *[habitual]*
(3) they take everything away from him and always try to find a "good" reason for it. *[habitual]*
(4) He has been grounded over there since Nov 8 2001 for his report card in the first quarter. *[state]*
(5) His dad is always telling him how much better at sports he is then my son and *[habitual]*
(6) *[he is]* putting him down for trying. *[habitual]*
(7) In everything my son does he isn't good enough. *[belief = state]*
(8) His wife stood in front of me and told my son that he was worthless and *[saying]*
(9) told me he should be worthless to me too and *[saying]*
(10) his dad stood there and cheered her on. *[saying]*
(11) She always tells him "you better watch it now, because now your dealing with me." *[habitual]*

Their type is revealed by their aspectual values. Interestingly, they mainly describe habitual events, i.e. they describe different customary types of actions, hence repeated, with which the father and stepmother are linked. Note, in this context, that both sentence (4) and sentences (8)-(10), which are not habitual expressions, only serve as illustrations of the more general pictures painted by the habitual expressions, (4) of (3) and (8)-(10) of (7). Furthermore, it should be noted that sentences (4) and (7) which describe states imply, or have as part of their background characterization, habitual events. That is, in order for an eleven-year-old boy to be grounded, it is typically necessary that the father and stepmother keep reminding him of the punishment in order for to be effective. Likewise, sentence (7) which describes a particular attitude, or belief, of the father is normally associated with a particular type of verbal behaviour, e.g., as the one mentioned by the mother in sentences (8)-(10). In other words, had the mother chosen a different strategy and described the father and step mother's actions as particular occurrences rather than different types of actions, e.g., "on a couple of occasions, I have witnessed his dad and wife to call him a liar"; "on a couple of occasions, I have witnessed his dad telling him how much better at sports he is than my son"; etc., then her accusation of emotional abuse would have been far less convincing. Note, in this context, that, in principle, the observation of a single occurrence is sufficient to instantiate a type. In *Virtual Reality* (1999a), Langacker defines a type as a virtual entity. This explains why the actions properly belonging to the Reference space, i.e. which relates to actuality, are only referred to indirectly. However, in terms of blending, it is more important to note that the events, or actions, to be homogenised (read: compressed) by DUG have already undergone homogenisation by their prior conceptualisation as types. Therefore, DUG can be said to function as a higher-order predicate in this case which has been assigned an imperfective construal by the progressive construction (see Langacker 1999b).

Third, and finally, it should be taken into consideration that most of the events mentioned in the text, (1)-(7) and (11), are atelic, i.e. they include no terminal point, or climax. This climax, or point is, of course, provided by the grave-digging frame in terms of the grave dug.

As already mentioned above, in the Presentation space, a particular type of event is invoked, viz. that of grave digging. This type includes two roles, (i) a gravedigger and (ii) grave digging.

The initial, crude mapping between the Reference space and the Presentation space maps the grave digger role onto the subject-referent, the father, and the action role of grave digging onto the actions of which he is made responsible, i.e. those that the mother deems to be instances of child abuse. This, minimally, results in the following structure being projected into a Virtual space, the pre-emergent-meaning-blend (Brandt & Brandt 2002): (1) a global view, i.e. grave digging, incorporating a local view, i.e. the different types of actions mentioned in the message compressed into a single homogeneous type; (2) the different actions "committed" by the father and his wife presented as if they were instances of grave digging; and (3) the father as grave digger. The topic of the sentence in which DUG is used concerns the (more than) likely outcome of the father's grave digging, i.e. "My son is starting to hate his dad and I try to prevent it but he is digging his own grave with him". In fact, the mother's attempt to prevent her son from hating his dad means that she serves as an extra barrier to be overcome by the father, apparently with no effect, see figure 1. At the same time, the father's grave digging is correlated with the son's changing emotional attitude towards him. As the barrier is gradually lowered, more and more hate fills the son. Hence, the high level of attention on the force dynamics of the situation, including its outcome, hate, which is deemed undesired by the mother's attempt to prevent it, creates a sharp contrast to the positive value assigned to the actions by the father himself. In terms of high-level perception, it seems to involve the alignment of two contrasting values with two conflicting views on the same situation, the one global, the other local. This alignment triggers the recruitment of the reality blindness (RB) schema in the Relevance space. It, in turn, is responsible for the lack of intention associated with the subject-agent arising in the blended space as an emergent property. Likewise the RB-schema establishes a link between harm and the son's beginning hate towards the father. This, in turn, invokes the semantic scale of harm, which not only allows the expression to be interpreted as an instance of hyperbole, but at the same time creates a link to death, the self-inflicted outcome of the father's actions, which can be linked to the father's failing as a father. That is, it is predicted that the father will lose his son (emotionally). As the RB-schema informs you, the reason of this failure is the father's lack of optimal vision, the missing global view, which in this case is presented as an inability to see the son's emotional needs, hence the mother's accusation of emotional abuse. Naturally, the inability to see his son's needs makes the father an incompetent parent. This leads to the intended meaning of DUG, i.e. what the mother wishes you to infer from it on this particular use. Evidently, the *stupidity* communicated on this occasion, the father's incompetence as a parent, is not meant to persuade a judge by directly ridiculing him, but rather by suggesting that he is stubborn (a weak kind of "ridicule"). This stubbornness, in turn, suggests that he is an uncooperative parent, which, in fact, counts as a legal argument. Note there might be several reasons why the mother prefers to communicate this indirectly, lack of evidence, a way to hide the legal implications of her story from the father etc. etc.. More importantly, however, the "audience" invoked by this use of DUG, this paper claims, is neither the actual audience nor the virtual audience identified above, but rather a second kind of virtual audience invoked involving something like "as everybody in their full senses would realise if they had experienced this directly", see the quotations on *echoic* language mentioned at the outset of the paper.

In other words, what is projected back to the Semiotic space is, (1) the father's incompetence as a parent and (2) his unwillingness to cooperate, which are both count as legal arguments.

4. Conclusions

This paper has emphasized the intricate relationship between grammar, discourse and blending networks. For instance, the idiom's canonical tense, the present progressive, was shown to play a homogenizing role in the compression of a number of different types of habitual actions. The inherent climax of the mono-transitive construction, *digging one's own grave*, was shown to provide the actions mapped from the Reference space with a common outcome associated with a global view. In this context, the possessive modifier *own* was argued to play an important role in the way it maps a global and a local view. It was also pointed out that the idiom's discursive function, for instance, in echoing a general opinion in order to persuade somebody, forms a central part of the blending network both in terms of the situation identified in Semiotic space and in terms of the schema recruited in Relevance space, the RB-schema.

As a consequence, it is suggested that grammar ought to be integrated further into current blending theory, which, in addition, would strengthen testability since results obtained by research on conceptual blending are hard to test.

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[i] 'Death' may conventionally be understood as being temporally located prior to 'grave digging', but that is not taken to imply that death is understood as causing grave digging.

[ii] "Mickey Blue Eyes" (1999). Director: Kelly Makin. Cast: Hugh Grant, James Caan, Jeanne Tripplehorn. James Fox; Burt Young.

[iii] Desson Howe, a Washington Post Staff Writer, made this comment on Friday, August 20, 1999. [http://www.washingtonpost.com/wp-srv/style/reviews/mickeyblueeyesshowe.htm?movieslede=y].

[iv] See Coulson (1997) on the role of **frame-shifting** in language.

[v] 'Actuality' as defined in Langacker (1999).

[vi] DeLillo, Don (1999). *Underworld*. London: Picador, 493.

[vii] Coulson (1997: 74).

[viii] Sperber & Wilson (1998) actually discusses temporal intervals. But, the same is assumed to be the case with scales.

[ix] From: http://www.childcustody.org/childabuse/ disc82/00000186.htm.

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Creative collocations and conceptual integration

Sonja Poulsen

Abstract

Traditional approaches to collocations focus on entrenched combinations and have no principled means of distinguishing creative collocations from unacceptable ones. On the basis of an example used by Firth, who posited collocation as a special level of meaning, I will argue that creative strategies follow general principles of compositionality and can be accounted for in the framework of conceptual integration. My argument assumes that judgements about the acceptability of composite structures involve the three types of context posited by Langacker (1987): 'systemic context': the position of the items in their respective schematic networks; 'syntagmatic context': how the items combine to form a complex expression; and 'situational context', the pragmatic circumstances of a usage event. Also important is the Firthian notion of 'context of situation', which is compatible with Fillmore's notion of 'semantic frames'. Finally, 'co-text' is the wider context of a complex expression, which provides further clues for meaning construction. For a non-conventional utterance to be accepted as a creative collocation, it should be recognizable as partly motivated by entrenched collocations and cognitive structures, and as justified by the pragmatic circumstances of the usage event. - If these conditions are not met, the new structure will be rejected as meaningless.

1. The traditional approach to convention and creativity

The study of collocations as a category of conventional expressions is about words in their 'familiar', 'habitual', or 'usual' company (Firth, in Palmer 1968: 106, 179, 180) and does not normally include creative strategies of meaning construction. In a structural approach, collocations are construed as arbitrary because they are based on tradition. Besides they are considered to be motivated only in the strictly synchronic sense of being analysable. Saussure referred to a principle that he called 'the stacked deck', which implied that arbitrariness was not meant to indicate that individuals have a choice; once established, the signifier is "fixed, not free, with respect to the linguistic community that uses it" (1966: 71). This principle shows that his characterization of the approach as 'static linguistics' (op. cit. 101 f.) is to be taken quite literally:

> We say to language: Choose! But we add: It must be this sign and no other. No individual, even if he willed it, could modify in any way at all the choice that has been made; and what is more, the community itself cannot control so much as a single word; it is bound to existing language.

Whereas Saussure focused on the system of language as a social institution that does not allow any choice for the individual, the focus in generative linguistics is on native speaker competence to create an infinite number of sentences based on a finite number of principles. From this point of view, the Firthian notion of 'meaning by collocation' seemed to reflect a regressive positivist and behaviouristic position. Thus Langendoen (1968: 3), a student of Chomsky's, dismissed Firth's ideas as "of no interest at all for the study of meaning", mainly because "Firth's view is based on the opinion that language is not 'creative' and that a person is totally constrained essentially to say what he does by the given social institution".

Lexicographers and foreign language teachers have generally adopted this view of collocations as arbitrarily restricted combinations that constitute a problem rather than a resource for language production. From this perspective, collocations are "odd comings-together of words" as it was put by the British lexicologist and lexicographer H. E. Palmer, who used 'collocation' as a practical label 20 years before it was introduced by Firth as a technical term[1]. 'Phraseology', which has been defined as the "sub-discipline of lexicology [which studies] fixed expressions" (Alexander 1987, in Howarth 1996: 6) is influenced by the concern about the problems of the foreign learner as well as by the Saussurean and generative approach to conventional expressions. Collocations are consequently treated as a phenomenon that is best addressed by strict categorization in terms of degrees of restrictedness. An alternative approach, which is mainly associated with corpus linguistics, treats collocation as probabilistic and identifies them on the basis of frequency of co-occurrence (Halliday 1966, Sinclair 1991, Stubbs 1996).

2. Firthian notions of collocation and context

The notion of 'collocation' is attributed to John Rupert Firth, who held the first Chair of General Linguistics at a British university, at the School of Oriental and African Studies in London, from 1944 till 1956. Whereas Firth took a generally structuralist approach to the analysis of language and believed that it should be studied from a synchronic point of view, he saw no discontinuity between language use and language system. He argued that, although a language event was basically to be considered as "a whole" and was "integral in experience", for the purposes of linguistic description, it could be construed as being dispersed to four interdependent and 'mutually congruent' levels of meaning (Firth, in Palmer 1968: 176):

- Collocation
- Syntax including colligation (relationships between categories)
- Context of situation
- Phonology and phonetics

The approach was polysystemic; Firth did not believe in language as a self-contained system where a statement of meaning could be achieved "by one analysis at one level, in one fell swoop" (Palmer 1969: 5). For the purposes of this article, I will only comment on his levels of 'collocation' and 'context of situation' (see below). Firth did not construe collocations as deviating from a standard of full compositionality. Whereas he focused on words in their habitual company, he did not consider the words to be 'building blocks', rather collocation was said to indicate 'elements of their meaning' (Firth[ii], in Palmer 1968: 106):

> In this connection, I would like to put forward the concept of collocation [...]. This is the study of key-words, pivotal words, leading words, by presenting them in the company they usually keep - that is to say, an element of their meaning is indicated when their habitual word accompaniments are shown

Focusing on the company that words usually keep does not mean that new company cannot be accommodated. Actually, one example analysed by Firth is the creative collocation *Emily-coloured* from a poem by Edith Sitwell (see section 5 below). In his comments on this poem, Firth referred to meaning by collocation as being "personal, idiosyncratic, or normal" (Firth, in Palmer 1968: 15 ff.), indicating that the concept could include creative combinations. In my view, what Firth's concept of meaning by collocation amounts to is the beginning of a theory of compositionality based on the polysemous nature of words and the enormous meaning potential of words in context. Because we know the meanings of words as they are used in habitual company in familiar, typical 'contexts of situation' (section 3 below), it is possible for us to "handle language in the interrelated processes of personal and social life in the flux of events" (Firth, in Palmer 1968: 14).

Before attempting an analysis of Firth's example, *Emily-coloured*, I will discuss aspects of context that are involved in meaning construction and their contribution to processes of conceptual integration.

3. Conceptual integration and context

According to Langacker (1987: 401), when two items are first combined, they are understood in terms of different types of context:

- systemic context: the position of the items in their respective schematic networks
- syntagmatic context: how the items combine to form a complex expression
- situational context: the pragmatic circumstances (centered on the speech-act participants) that give rise to a particular usage event

I will pursue the idea that judgements about the functionality and acceptability of creative collocations are made by hearers/readers in terms of these types of context, to which can be added the Firthian notion of context of situation, which he defined as "a schematic construct for application especially to typical 'repetitive' events in the social process" (in Palmer 1968: 176[iii]). At the same time, it was also meant to ensure 'renewal of connection' with actual language events, so that a text was "attested as common usage in which the occasional, individual and idiosyncratic features are not in the focus of attention" (op. cit. 175).

Firth believed that language should not be explained by referring to any "inner mental happenings", and consequently context of situation was to be considered as an abstraction from use. However, his notion seems compatible with the theory of semantic frames[iv] (Fillmore 1977, 1982, 1994; Coulson 2000), which associates typical situations and actions with entrenched cognitive structures as well as linguistic ones. A well-known example is Fillmore's 'commercial event frame', which includes a 'buyer', a 'seller', 'goods' and 'money' as typical participants and 'buying', 'selling' and 'paying' as typical processes (Fillmore 1977: 58 f.). Frames, together with the other aspects of context, are important clues for the identification of creative collocations, because they make it possible to recognize them as anchored in entrenched combinations. As pointed out by Coulson (2000: 19), it is an important aspect of frames that they are associated with 'default values' consisting of "the most typical and/or frequent filler for each slot". Entrenched collocations often express such default values and may therefore serve as reference points for creative collocations.

A further relevant notion of context is that of 'co-text', a term used by Howarth (1996: 54) to refer to short pieces of preceding text provided in psycholinguistic studies as "semantic clues for the interpretation of pre-selected idiomatic strings". Firth indicated that the analysis of a collocation should include complete sentences and, in the case of conversation, might be extended to include the utterances of preceding and following speakers (Firth, in Palmer 1968: 106). This shows that he saw meaning construction as an ongoing process that cannot be isolated to individual expressions or sentences. Whereas the level of collocation can be seen as corresponding to Langacker's notions of syntagmatic and systemic context, the Firthian approach does not include any level that corresponds to situational context. Firth referred to 'language events' as occasions on which categories "find application in renewal of connection with the sources of the abstractions" (Firth, in Palmer 1968: 200), but the focus of linguistic description was the language that could be "abstracted from the mush of general goings-on" (op. cit. 199). Today, the theory of mental spaces and conceptual integration provides models for the description and analysis of actual utterances in context. Consequently, it is a suitable framework for investigating what is going on when collocations are used creatively.

4. Creative collocations and conceptual integration

The theory of ‘mental spaces’ and ’conceptual integration’ (Fauconnier and Sweetser: 1996, Fauconnier: 1997, Fauconnier and Turner: 1998; Coulson: 2000) describes how meaning from different domains is integrated during discourse. Frames representing the domains can be represented as inputs to a network of mental spaces, in which selective projection to a blended space may cause new meaning to emerge by means of processes of 'composition', 'completion', and 'elaboration' (Coulson 2000: 122). With its focus on actual usage events, this is an obvious framework for the description of creative collocations, but as Sweetser (1999) has shown, the theory can also be used to account for general mechanisms of compositionality. Creative collocations attract attention to themselves by violating the order of ‘mutual expectancy’ associated with established collocations (Firth[v], in Palmer 1968: 181). That familiar composite structures seem more straightforward does not necessarily imply that meaning construction is less complex.

The advantage of a mental spaces and conceptual integration model is its ability to show those aspects of online meaning construction that are abstracted away by more general accounts. In the case of collocations, the approach can be used to show their creative potential, an aspect of their functionality that is normally overlooked because entrenchment is seen as precluding creativity. From a functional and cognitive point of view, however, there is no conflict between creative innovation and the existence of entrenched language routines abstracted from concrete situations of usage; rather the former is construed as building on the latter. Thus, as pointed out in Fauconnier and Turner's (1998: 133) article, the products of conceptual integration often become entrenched, and conceptual integration often "performs new work on its previously entrenched products as inputs". There seems to be a balance in language between 'routinization', perhaps for the sake of economy, and finding "new ways to say old things", or 'deroutinization', to enhance expressivity (Hopper and Traugott 2000: 63 f.). Using entrenched collocations creatively fits into this pattern.

The type of context most commonly referred to in the literature on mental spaces and conceptual integration is situational context. Coulson (2000: 16) points out that "we can understand the contextual variability of utterance meaning as reflecting differential access to information in memory as a function of context". A *safe house* means different things to owners and burglars (cp. Sweetser 1999: 142 f.). As language typically underspecifies meaning, the pragmatic circumstances will often determine what a specific utterance is actually taken to mean. Another notion is Firth's context of situation, which relates to the social status of expressions. It is comparable to Fillmore's notion of frames, which, moreover, includes their psychological status. Frames play a central role in conceptual integration as they provide internal structure to both inputs and blends. Because they relate to typical situations with familiar processes and role configurations and are also associated with entrenched language routines, they provide ample opportunity for creative processes involving such routines. Thus a combination like *rancid linen* will be considered to be a creative collocation if the two words evoke different frames, and their integration is justified by the usage event. As the linguistic material is typically compatible with different frames, actual framing will depend on the situational context (Coulson 2000: 33 f.). Furthermore, syntagmatic context, which corresponds to collocation, may structure relations between elements in a space or it may establish counterpart relations between elements in different spaces, depending on how information is partitioned. Finally, the wider context, or co-text, is a syntagmatic extension at the collocational level, which provides clues for ongoing meaning construction. The necessity of including the co-text can be related to the fact that, in a conceptual integration network, "meaning is not constructed in any single space, but resides in the entire array and its connections" (Fauconnier and Turner 1998: 158). Finally, systemic context relates to lexical items as 'complex categories', conceived as dynamic 'schematic networks' in which the 'nodes' are a variety of interrelated senses and conventionally sanctioned usages (Langacker 1987: 369 f., 380, 401). In my view, the 'systems of constituents' mentioned by Firth can be characterized as schematic networks as they, too, relate instances of use of a lexical item to a category with rich internal structure. Word combinations may be presented as conceptual integration networks in which such complex categories structure input spaces and allow mappings or projections between them.

5. Emily-coloured

This creative collocation is from a poem by Edith Sitwell that was noticed by Firth because of a discussion in the British newspaper, *the Observer*, in September and October of 1951. The discussion was about failures of communication caused by writers who, allegedly, were not sufficiently conscious of the backgrounds of their readers (Firth, in Palmer 1968: 15 ff.). A Mr Philip Toynbee thus complained of Edith Sitwell's 'wanton privacy' in using a phrase that he misquoted as *Emily-coloured hands* and which he claimed was inaccessible to all readers except perhaps her own friends. With the comment that "taking a line out of its context helps to obscure its meaning in many cases", Edith Sitwell supplied the relevant lines:

For spring is here, the auriculas
And the Emily-coloured primulas
Bob in their pinafores on the grass

(In the meantime, another reader had written in to say that she had no problem making sense of *Emily-coloured hands*, which, to her, had "the tang as well as the colour of white pepper").

Firth combined analysis at the syntagmatic, or collocational, level with an analysis of 'systems of constituents' "each one of which is a 'term' having 'function' or meaning by interior relations with other terms of the system" (Firth, in Palmer 1968: 19). This paradigmatic dimension of collocation is now commonly referred to as 'lexical sets', so that collocation and set are seen as mutually defining at the lexical level, as are structure and system at the level of syntax (Halliday 1966: 152). On the assumption that these sets can be characterized as schematic networks, Firth's analysis[vi] includes Langacker's notions of syntagmatic and systemic context.

As pointed out (in section 3 above) the Firthian approach does not include any level that directly corresponds to situational context, although he stressed that to him meaning was "the property of the mutually relevant people, things, events in the situation". Consequently it was important to establish renewal of connection with actual utterances without which he argued that abstract linguistics had no justification (Firth, in Palmer 1968: 19). In the analysis of *Emily-coloured* (op. cit. 15 ff.), renewal involved including the wider context, or co-text:

> "... part of the meaning of *Emily-coloured primulas* is collocation with *Bob in their pinafores on the grass*. This level I have termed meaning by collocation, which may be personal and idiosyncratic, or normal"

This extended use of 'collocation' to include not only conventional but also creative collocations, reflects a dynamic approach to meaning construction. More generally, it shows that Firth found traditional categories of semantics inadequate, especially what he called the "conceptualist word-idea approach in descriptive linguistics". He therefore suggested that the time had come "to try other abstractions using the larger contexts in which words are embedded" (op. cit. 18). If it had not been for his objection to including assumptions about 'inner mental happenings' in linguistic analysis, a mental spaces and conceptual integration model would seem to be what he was looking for.

The following is an attempt to analyse the three lines from Edith Sitwell's poem as an example of conceptual integration. The analysis will proceed in three stages:

1. *Emily-coloured*
2. *Emily-coloured primulas*
3. *Emily-coloured primulas bob in their pinafores on the grass*

The framework will be a prototypical four-space conceptual integration network with two input spaces, a blended space, and a generic space representing the abstract properties shared by all spaces. For the sake of simplicity, the networks will be presented in a table format (based on Coulson 2000: 130).

In isolation, *Emily-coloured* can be analysed as a 'single-framing network' (Turner and Fauconnier 1998: 169 f.; Coulson 2000: 120) in which one input (*Emily*) has elements but no frame, and the other (*-coloured*) has an abstract frame with information about relations, but no elements to fill the slots provided by the frame.

Input 1	**Input 2**	**Blend**	**Generic**
Girl's name	Colouring	Colouring	Girl's name + Colouring
Elements	**Elements**	**Elements**	**Elements**
Emily	None	Emily/her colour	Girl's name/colour
Relations	**Relations**	**Relations**	**Relations**
None	-coloured	-coloured	-coloured

Table 1. Single-framing network: *Emily-coloured*

Consequently, input 1 will have to be integrated in the frame of input 2, which organizes the blend. In other words, the meaning of *Emily* depends on its syntagmatic context, or collocation, with *-coloured*, and it is therefore necessary to analyse the systemic context of *-coloured* in order to find out where *Emily* fits in. As mentioned above, the systemic context is conceived as the schematic network of meanings of *-coloured*, which structures the space. Firth, for the purpose of his analysis, listed groups of collocations with 'coloured' and concluded that *Emily* as a constituent could be assigned a 'value'[1] as a sectional member of the group of the nominals in 1 a).

1) Closely related nominals
a)*Rose-*, *coffee-*, *chocolate-*, *plum-*, *Emily-*
b) *dark-*, *light-*
c)*h-coloured*, *r-coloured* (phoneticians' technical jargon)
d) *multi-*, *parti-*

2) Closely related adverbs
a)*brightly -*, *gaily -*, *highly -*'

This can be seen as an example of the blending process called 'completion' (Coulson 2000:122) in which a relation from one input space is attributed to an element from the other space. Firth made his judgement by comparing *Emily* to collocations with *-coloured* that were familiar to him (most others might not include the phonetic terms). This is probably a judgement that many people would agree with, although, depending on co-text and situational context, it would be possible to assign *Emily* to any of the groups listed. If, for example, his group 2 a) had included *softly*

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[1] Palmer (1968: 7) comments that "Firth took from de Saussure (while rejecting much of de Saussure's theory) the notion of value (valeur). There was commutation of the terms in each system and the values of the terms were derivable from the system itself".

coloured, Emily-coloured might have been fitted in here. The counterpart mapping between the two spaces 'profiles' or 'activates' specific substructure of the *coloured* space and the aspect of colour from the *Emily* space. The mapping thus determines the selective projection from the input spaces to the blend. Whether any additional meaning emerges in the blend will depend on the syntagmatic context of *Emily-coloured* and on the situational context. Projection from the *Emily* space is metonymic; only the aspect of colour is projected, but there is nothing to indicate if it is the colour of her face, her hands or her favourite dress. Furthermore, since *Emily* is not projected as the name of an individual, but as a ‘typical Emily', personal associations or cultural connotations of the name may come into play. It might even turn out that the past participle form should be understood by analogy with *hand-coloured*, which would change the frame to one in which *Emily* was the agent having performed an act of colouring ‘something’.

In the second analysis, which has *Emily-coloured* and *primulas* as inputs, the two spaces have separate, but overlapping frames. Although the -*coloured* frame has an object slot into which *primulas* fits, the frame does not specify ‘primulas’ or even 'flowers', whereas the *primula* frame has a slot for a specific range of colours that differ from the colour of, say, ‘glass’, ‘light’, ‘shirts’, or ‘hands’. According to the Encyclopaedia Britannica, the colour of the petals of primulas may be red, pink, purple, blue, white, or yellow. All things considered, I would argue that the *primula* frame is projected to organize the blend.

Input 1	**Input 2**	**Blend**	**Generic**
Colour	Flower	Coloured flower	Colour + Flower
Elements	**Elements**	**Elements**	**Elements**
Emily	Primulas	Primulas	Girl +Flower
Relations	**Relations**	**Relations**	**Relations**
-coloured	None	Emily-coloured	Colouring

Table 2. One-sided network: *Emily-coloured primulas*

This construal makes it a 'one-sided network' (Fauconnier and Turner 1998: 165 f.; Coulson 2000: 121) characterized as a one in which the inputs have different organizing frames and the blend inherits frame-level structure from one frame, whereas more specific structure is inherited from the other input. As in the first example, an analysis of systemic context of the inputs is necessary so that a judgement can be made about syntagmatic context and the mappings between the spaces. The systemic context of *-coloured* has been discussed above. The systemic context of *primulas* can be represented in the same way, as a schematic network of combinations in which *Emily-coloured* could find its natural place as an ad hoc addition to the group of colour adjectives like *red, pink, white,* and *yellow*.

Apart from linguistic knowledge, knowledge about the *primula* frame includes encyclopedic knowledge about the colours of primulas and more basic cognitive knowledge about the part-whole configuration of flowers, i.e. that they have petals, stalks and leaves, and that when people refer to the colour of flowers, it is normally the colour of the petals that they refer to. The counterpart mapping between *Emily-coloured* and *primulas* will consequently profile the petals of the flowers as well as the relevant linguistic structure: *pink, yellow,* etc. *primulas* and these elements of meaning are projected to the blend. Although *Emily* is integrated in the –

coloured frame as a 'shade of colour', the further integration with *primulas* will activate frame specific knowledge about the part-whole configuration of the 'whole' Emily. Since the face is a salient part of a human being, this is likely to lead to a mapping from her cheeks to the petals of the flowers, but the context of situation might of course require different mappings - for instance if the primulas turned out to be yellow. The cross-space mappings determine what is projected to the blend. The meaning that begins to emerge is the poetic image of little 'girl flowers'- a meaning that is not found in either of the inputs.

Finally, a conceptual integration network that includes the full context, or co-text, of *Emily-coloured* provides more satisfactory material for evaluating this creative collocation.

Input 1	**Input 2**	**Blend**	**Generic**
Girls	Flowers	Girls - Flowers	Girls - Flowers
Elements	**Elements**	**Elements**	**Elements**
Emily	Primulas	Emily	Girls
Pinafores	Grass	Pinafores	
		Primulas	Flowers
		Grass	
Relations	**Relations**	**Relations**	**Relations**
	-coloured	-coloured	Colouring
Bob	Bob	Bob	Dancing/ Movin up and down

Table 3. One-sided network:
Emily-coloured primulas bob in their pinafores on the grass

The two input spaces have each their frame: one has girls wearing pinafores 'bobbing' (or dancing); the other has primulas 'bobbing' in the grass. I construe it as a one-sided network, where the blend inherits the *primula* frame, and the cross-space mappings are metaphoric with input 1 as the source and input 2 as the target. The mappings are between the cheeks of the girls and the petals of the primulas, between the pinafores of the girls, which are specific-level structure, and the leaves of the primulas, or perhaps the grass, and finally the 'bobbing' allows a mapping between the bodies of the girls and the flower stalks. This blend relies heavily on cognitive knowledge about the frames that structure the two inputs, which allow mappings between elements like 'cheeks' and 'petals' and 'bodies' and 'stems' that are not mentioned at all. This allows specific level structure to be added to the frame by making the 'Emily's' in input 1 wear 'pinafores' only to map them on to the 'primulas' in input 2. This further shows that although 'Emily' is used to mean a colour typical of the colour of the cheeks of a kind of girl called by that name, the item can still be used to evoke the frame of the 'whole' girl, which can then be multiplied so that suddenly we have a bevy of girls by analogy with the cluster of flowers. I have said that the Firthian concept of typical 'context of situation' is compatible with the notion of frames, but the two last stages of the analysis show that a purely linguistic notion like Firth's has its limitations. Thus it would not be able to account for the kind of pattern completion and elaboration involved here, where meaning construction is prompted by very few linguistic cues.

So what is the meaning that emerges in the blend? This is the impression that the three lines made on Firth, who had to admit that there is more to meaning than can be abstracted from words (in Palmer 1966: 18):

> And though my employment of these controversial lines has been entirely linguistic, I am happy to say that thanks to the poet I *have* seen them bobbing in their pinafores on the grass, the Emily's *and* the primulas.

The one type of context that has not been directly involved in this discussion is situational context: the pragmatic circumstances that gave rise to the particular usage event that started the discussion of *Emily-coloured*. As mentioned at the beginning of this section, the situation was a debate in *the Observer* about the importance of considering the background of readers. Not everyone was able to make sense of *Emily-coloured*; perhaps because not everyone had access to all the relevant aspects of context.

6. Conclusion

The continuity between entrenched and innovative language structure was as important to Firth fifty years ago as it is to cognitive linguists today, but has been largely absent from the discussion of collocations in the meantime. To Firth a language event was the occasion on which abstract contexts of situation were attested in renewal of connection as abstracted from common usage. In a framework of conceptual integration, it is possible focus on the language event itself, before decontextualization, so that both linguistic, cognitive and pragmatic aspects of context can be taken into account. Such an approach shows that using entrenched collocations as an input to creative meaning construction is a normal and functional strategy. Firthian notions of collocation and context of situation are surprisingly compatible with cognitive notions. However, Firth did not include pragmatic context as a levels of analysis, nor did he want to assume anything about 'inner mental happenings'. I have pursued the argument that all the mentioned aspects of context are relevant for judgements to be made about the meaningfulness of a creative collocation. There are limits to how much we can say about the way we speak without also taking into account the way we think.

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Notes

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[i] Palmer, H.E. 1933. *Second Interim Report on English Collocations* (Fourth impression 1966). Tokyo: Kaitakusha.

[ii] Firth, J.R. Descriptive linguistics and the study of English. Read in Berlin, May 1956.

[iii] Firth, J.R. A synopsis of linguistic theory, 1930-55. (Special volume of the Philological society, Oxford 1957, 1-13).

[iv] The term 'frame' has come to be used to refer to a set of related concepts, which in addition to the notion developed by Fillmore, includes script, schema, scenario, idealized cognitive model, and folk theory (Coulson 2000: 20).

[v] Firth, J.R. Linguistic analysis as a study of meaning. (Apparently prepared for publication in 1952 or 1953, but never published).

[vi] Firth, J.R. Linguistic analysis as a study of meaning. (Apparently prepared for publication in 1952 or 1953, but never published).

Shorts, breeches, and bloomers: Plurality in blends

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Abstract

This paper attempts to combine the onomasiological approach to word formation developed by the Russian school of linguistics with the theoretical apparatus of Cognitive Grammar and Conceptual Integration Theory. The analyzed English data are represented by the names of clothes, where derivatives with the *–s* suffix are brought to attention. It is maintained that the domain of clothes is grounded on a conceptual structure, the fragments of which are exposed in the meanings of the linguistic sound forms, or motivators. This structure is construed by highly schematic frame models that seem to be the universal tools of human cognition. The issues discussed are conceptual networks, vital relations, compressions, blends, and "sharedness" of the Base space.

1. Introduction

The two traditional branches of linguistic semantics are semasilogy and onomasiology. While *semasiology* studies meaning in the direction "from the form to the concept(s) it evokes, semasiology proceeds in the direction "from the concept to the form(s) with which it is expressed". The latter approach, initiated by the Prague School of Linguistics, was further developed in numerous works on lexical and functional semantic fields (see Bondarko 1972; Shur 1974; Geeraetrs, Grondelaers, Bakema 1994 among others).

In the late 70s of the last century, the onomasiological studies conducted in Russia (Jartseva 1977; Kubryakova 1978) took a new turn: the question "What words name the concept?" was followed by the question "Why is the concept named with these very words?" Hence, the focus of attention shifted to motivation – the relation between the concept, or meaning, evoked by a word, and the fragment of this meaning exposed in the word's sound form. This aspect of semantic studies, called **the**

Theory of Naming, centers on both the "what" and "how" semantic issues, and demonstrates the interplay between semasiology and onomasiology (see Dirven and Verspoor 1998: 40-46 for more detail).

The Theory of Naming had theoretical implications for the studies of word formation which considered semantic relations between the morphemes in a derived word. Elena Kubryakova (1978; 1981) proposed to represent these relations with ternary **onomasiological structures**, where the foundation (the concept which is named) and the property (the concept which characterizes the basis), are linked by the predicate, e.g. *pianist* – 'the person (foundation) plays (predicate) the piano (property)'. An onomasiological structure reveals the nature of a motivator – the fragment of word meaning represented in the "physical body" of a sign. This representation can be explicit (when the elements of a ternary structure are marked, e.g. feature: *piano*; basis: person, *-ist*), and implicit (when one or two elements are unmarked, e.g. predicate *plays*).

Elsewhere (Zhabotynska 1992; 1997; 1998; 1999) I argue that onomasiological structures can be generalized, so that their elements are associated with the most abstract categories of thought related to the notion of a THING. As a result, we have an onomasiological structure equated with a **schema.** As Suzanne Kemmer (forthcoming) observes, schemas in language are generalizations extracted from linguistic forms and meanings. A schema is a cognitive representation consisting of perceived similarities across many instances of usage. Schemas are cognitively entrenched patterns of experience; once sufficiently entrenched, they can be used to produce and understand linguistic expressions. The latter are categorized by schemas in production and comprehension. In this way expressions are linked to the knowledge structures that produce them and make them interpretable.

The conception of onomasiological schemas is compatible with the methodological findings of Cognitive Grammar (Langacker 1987; 1991 among others) and Conceptual Integration Theory – CIT (Fauconnier & Turner 2000).

The relevant notions of Cognitive Grammar are those of conceptual base, profile, trajector and landmark (Langacker 1997: 5). The conceptual **base** is the array of conceptual content evoked by a linguistic unit. Within the base, an expression singles out some substructure – called the **profile** – as a focus of attention, in the sense of being entirely designated by the expression. Expressions that profile relationships exhibit the prominence, pertaining to the salience of relational participants. A participant accorded primary focal prominence is called the **trajector**. A participant accorded secondary focal prominence is termed the **landmark**.

Provided the entire meaning of a word is a conceptual base, the fragment of this meaning exposed in the motivator can be regarded as a profile. The profile is structured by an onomasiological schema, where the foundation is the trajector, and the property is the landmark. E.g. *pianist* – **base**: 'a person who plays the piano professionally, who gives concerts playing alone or in an orchestra, etc.; **profile**: 'a person who plays the piano'; **trajector** (onomasiological foundation): 'a person'; **landmark** (onomasiological property): 'piano'.

The applicable notions from CIT are a conceptual network, vital relations, compressions, and blends (Fauconnier & Turner 2000). When employed for the analysis of onomasiological structures, these notions can be understood as follows. The entire meaning of a word (the conceptual base) is structured by some schematic **conceptual network**. Its nodes are relatively autonomous concepts, whose "spaces" include meaningful elements linked by some **inner-space vital relations**. In the network, such autonomous spaces are combined with one another by some **outer-space vital relations**. A fragment of this network construes the profile, whose onomasiological schema is exposed through the sound form of a sign. In this schema, the trajector and landmark can be thought of as two input spaces related by the linking predicate. Some names have the profiles whose onomasiological schemas demonstrate an immediate vital relation between the two input spaces. There are names, however, where such a relation is not immediate, as it is mediated by the links with some other spaces represented in the schematic network of the word meaning. So, the onomasiological schema inferred from the motivator squeezes information about the input spaces and "compresses the outer-space vital relations between inputs into inner-space vital relations in a blend" (Fauconnier & Turner 2000: 130). Such cases can be interpreted as **onomasiological compressions**, represented by **onomasiological blends**.

Thus, the theoretical assumptions of this research are: (1) the conceptual case, or the meaning of a (derived) name, is grounded on some abstract schema, where the autonomous concepts are linked in a network by some inner-space and outer-space vital relations; (2) a fragment of this network is an onomasiological schema relevant for the conceptual profile, or the focal part of linguistic meaning designated by the motivator which has a sound form. (3) an onomasiological schema represents the relation between the primary concept, or the trajector, and the subsidiary concept, or the landmark, which can be interpreted as input spaces; (4) this relation can be either immediate or mediated by the other spaces – the concepts found in the conceptual network of the linguistic meaning; in the latter case such concepts are covert, and the word sound form becomes a compressed onomasiological blend.

To verify the feasibility of these assumptions, I will apply the bulk of derived names – words and set phrases that denote articles of clothes, with an emphasis on those with the suffix *–s* (*shorts, tights, leathers, bottoms, bloomers, Levises, Wellingtons,* etc.). In the onomasiological schemas of such names, the CLOTHES concept becomes the foundation, or trajector, and the concepts representing various properties of clothes become the landmark. The further research will focus on the nature of these properties and their relations with the trajector. However, the analysis of onomasiological schemas should be preceded by the discussion of one more important issue: the representation of node spaces and vital relations within a schematic conceptual network.

2. Word Meaning: A Schematic Network

The analysis of various linguistic data, particularly part-of-speech systems, and some syntactic structures (Zhabotynska 1999; 2001; 2002) makes it possible to presume that linguistic meanings are grounded on the schematic network formed by several basic frames – the Thing Frame, the Action Frame, the Possession Frame, the Taxonomy Frame, and the Comparison Frame. Frames are understood broadly, as the structures of knowledge, or "idealized cognitive models" (Lakoff 1987). The frames discussed here are called "basic" because they demonstrate the most general principles of categorizing and organizing information manifested with language. This information pertains to things of the experiential world, their properties, and relations with other things. The THING concept is an autonomous space that has an inner-space structure. Several things linked together construe an outer-space structure. Therefore, the THING concept is central for the conceptual network.

In **the Thing Frame**, one and the same entity (SOMETHING – SMTH) is characterized along its quantitative, qualitative, existential, locative, and temporal parameters. They are represented in the set of propositions where a property is linked to the thing by the inner-space vital relation ***is/exists***:

SMTH ***is*** THAT MANY/ MUCH (quantity);
SMTH ***is*** SUCH (quality);
SMTH ***exists*** SO (mode of existence);
SMTH ***is/exists*** THERE (place of existence);
SMTH ***is/exists*** THEN (time of existence).

The properties of a thing may obtain a subjective assessment SO ('exactly – approximately'; 'norm – more – less'; 'true – false'; 'neutral – bad – good'), e.g. *he is very kind, they are very many, she is nearly there, she is hardly there, etc.*

The other frames demonstrate outer-space vital relations between several things, each of which can unfold into the Thing Frame, if required.

In **the Action Frame**, several things, or participants of an action, assume the argument roles of Agent, Patient, Instrument/Attendant, Recipient, Goal/Cause, and Result/Beneficiary (cf. Fillmore 1968; 1977; Goldberg 1995). The vital relations between them are established via an action performed by Agent, and manifested with the verb ***acts*** accompanied by prepositions: *acts with* (Instrument/Attendant), *acts upon* (Patient/Object), *acts towards* (Recipient), *acts for/because* (Goal/Cause), and *acts for* (Result/Beneficiary).

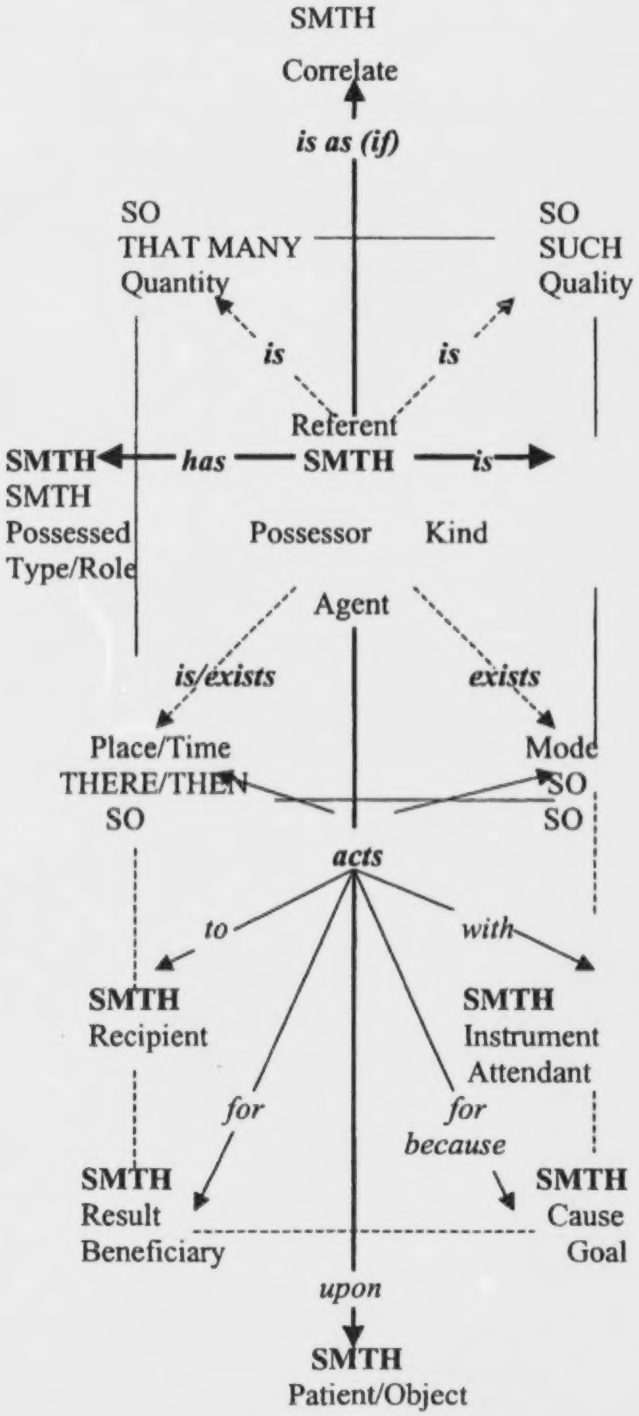
The Possession Frame demonstrates the vital relation SMTH-Possessor ***has*** SMTH-Possessed. This relation is specified in three sub-frames: Whole ***has*** Part(s); Container ***has*** Content; and Owner ***has*** Owned.

The Taxonomy Frame exposes the vital relation of categorization: SMTH-Kind ***is*** SMTH-Type/Role. 'Type' is a permanent taxon of a thing, e.g. *a dog is an animal*; while 'Role' is a temporary taxon of a thing, e.g. *a dog is a hunter.*

The Comparison Frame manifests the vital relations of identity – SMTH-Referent ***is (as)*** SMTH-Correlate; similarity – SMTH-Referent ***is as*** SMTH-Correlate; and likeness – SMTH-Referent ***is as if*** SMTH-Correlate. Likeness is the foundation of metaphor.

Integration of the basic frames (Fig. 1) produces a highly schematic lattice that is further elaborated in the meanings of linguistic expressions. This lattice, or network, seems to represent the possible directions in which we reason about things that surround us in the experiential world.

Besides, the basic frames can be used to construe the conceptual structure of a particular domain to which the thing belongs. For the data considered, this domain is CLOTHES.


SMTH
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Instrument
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for
because
SMTH
Result
Beneficiary
SMTH
Cause
Goal
upon
SMTH
Patient/Object

3. CLOTHES Domain: Conceptual Network

The 'Clothes' conceptual domain relates several THING spaces:

- SMTH, an article of clothes as a whole;
- SMTH – a part or parts of an article of clothes;
- SMB – the source, or manufacturer, of clothes;
- SMB – a person who wears clothes that are located on his/her body;
- SMTH – a part or parts of the body where the clothes are worn;
- SMTH – the place where the clothes are worn;
- SMTH – the time when the clothes are worn;
- SMTH – the purpose for which the clothes are worn.

The onomasiological schemas of derived names demonstrate the links of these spaces within the Possession Frame and the Action Frame. Besides, the information about an article of clothes and its parts unfolds into the Thing Frame. In most cases, an onomasiological schema, as a part of the signifier, relates to the name's meaning, or the signified, metonymically.

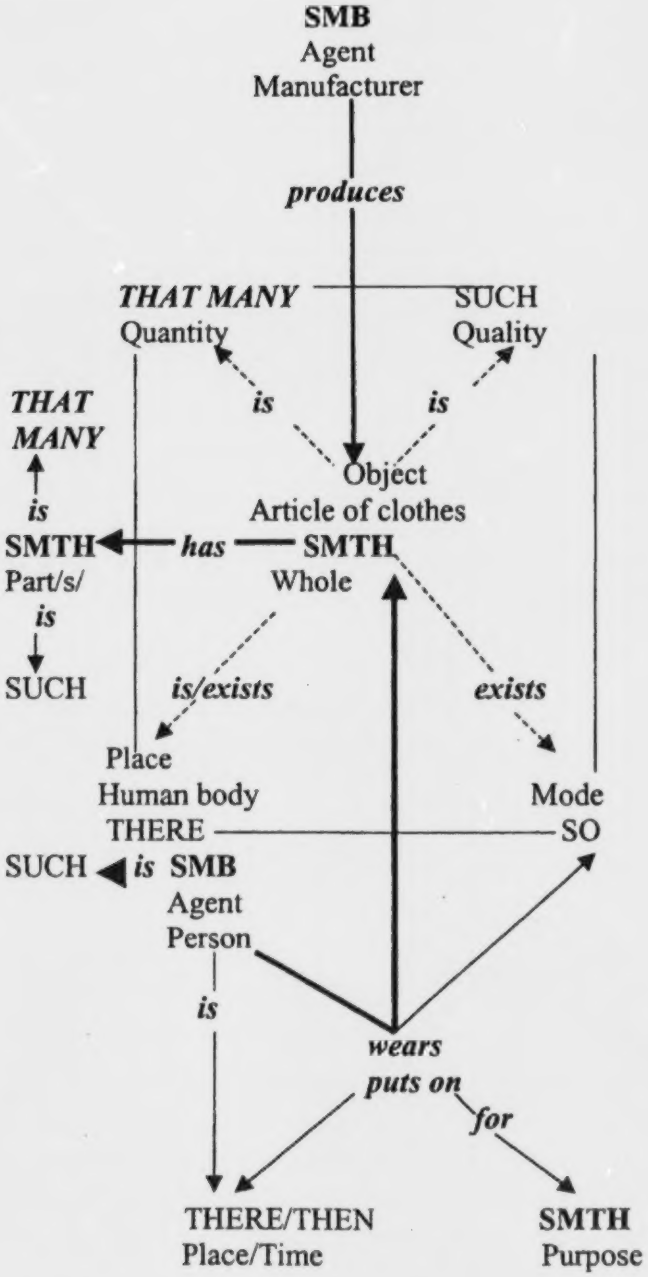
The Thing Frame. (1) SMTH, an article of clothes ***is*** SUCH: form – *peaked hat, bow tie,* (metaphor) *T-shirt*; length – *mini, maxi, longer-length blazer*; material – *fir coat, silk hat*; price – *four-and-nine /penny/* 'a hat, 1884 – 1888, London'. (4) SMTH, an article of clothes ***is*** THERE: the human body – *bodice, body suit*; a body part – *handkerchief, necklace.*

The Possession Frame. (1) SMTH, whole, an article of clothes ***has*** SMTH, part/s/: *pantsuit, halter dress, hooded jacket, sleeveless jacket.* (2) SMTH, whole, an article of clothes ***has*** THAT MANY SMTH, parts: *trousers, double-breasted jacket, two-buckle shoe/s/.* (3) SMTH, whole, an article of clothes ***has*** SUCH SMTH, part/s/: *flat heels, high heels,* (metaphor) *tailcoat, turtleneck sweater.* (4) SMTH, whole, container ***has*** THAT MANY SMTH, parts, content: *one-piecer, two-piecer.*

The Action Frame. (1) SMTH, agent, a part of the article of clothes ***acts*** SO */upon* X/: function – *suspender/s/, zipper, clasp.* (2) SMB, agent, a manufacturer ***acts upon / produces*** SMTH, object, an article of clothes: *Levis jeans, Reebok shoes.* (2) SMB, agent, a person ***acts upon / wears*** SMTH, object, an article of clothes: somebody's name – *Wellington boots, Blucher boots*; gender: *girl's dress, men suit*; profession: *miner boots, military suit.* (3) SMTH, object, an article of clothes ***is acted upon / worn, put on*** SO, mode of wearing or putting on: *overcoat, underwear, step-in, wrap-over vest.* (4) SMTH, object, an article of clothes ***is acted upon / worn*** THERE, place: a geographical region – *panama, Bermuda shorts, Astrakhan cap*; a particular setting – *trench coat, dorm shirt, beach suit.* (5) SMTH, object, an article of clothes ***is acted upon / worn*** THEN, time: season and weather – *winter dress, sundress*; a special event – *wedding dress, dinner dress.* (6) SMTH, object, an article of clothes ***is acted upon for / worn for*** SMTH, purpose: specific activity – *polo, boater, surfer*; an undesired thing – *windbreaker, sweatband*; a desired thing – *sweater, sweat.*

These onomasiological schemas integrate into the conceptual network (Fig. 2) that structures the domain of CLOTHES and represents the possible directions for generating the meaning of units constituting the respective semantic field. Within the domain, each THING entity (SMTH or SMB) can be further specified with regard to its various properties – qualitative, quantitative, locative, temporal, and evaluative, which may surface in the motivator as a signifier of meaning, e.g. *open toe slingbacks* 'shoes with open sides and toes', *girl's skinny leg jeans*, *baby' night jacket, short-sleeved car coat*, etc. This specification may be considered as the cognitive operation of "filling in the contours" (Shepard & Cooper 1984) that causes transformation of a mental image.

Besides, the conceptual network of onomasiological schemas can be employed for explaining the phenomenon of word-formation blends, or compressions. They are most vividly exemplified by the derived words with the suffix *–s*.


SMB
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Manufacturer
produces
THAT MANY
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Quality
is
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MANY
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Article of clothes
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Human body
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SUCH
is
SMB
Agent
Person
is
wears
puts on
for
THERE/THEN
Place/Time
SMTH
Purpose

Fig. 2.

4. CLOTHES Domain: Plurality in Blends

The suffix –*s*, a conventional notation of plurality, is also applied in word-formation. The grammatical meaning of plurality relates to replicability of a thing (Langacker 2000). In derived names of clothes, the suffix acquires the meaning of exact quantity – '2 things, or a pair' – and becomes the notation of 'a set'. The set is formed by either two matching pieces of clothes (e.g. *2 shoes*; *2 overalls /aprons/*) or two identical conspicuous parts of one and the same article of clothes (*2 trousers*). In the first case, –*s* designates the trajector, or onomasiological foundation, and its meaning fits into the Thing Frame: SMTH, set ***is*** THAT MANY, two items. In the second case, –*s* refers to the landmark, or onomasiological property, and its meaning fits into the Possession Frame: SMTH, whole, an article of clothes ***has*** THAT MANY SMTH, two parts (see Fig. 2).

The suffix –*s* is added to the stems that designate various slots, or spaces, of the conceptual network:

A set of two matching items – the trajector.

- SMB, agent, a manufacturer ***acts upon/produces*** SMTH, object, an article of clothes: *Reeboks, Nikes* (shoes).
- SMB, agent, a person ***acts upon / wears*** SMTH, object, an article of clothes + SMB ***is*** SUCH: name – *Wellingtons, Bluchers* (boots).
- SMTH, object, an article of clothes ***is acted upon for / worn for*** SMTH, purpose: specific activity – *hikers, sneakers, crosstrainers,* shoes.

Two identical parts of a whole – the landmark.

- SMB, agent, a manufacturer ***acts upon/produces*** SMTH, object, an article of clothes: *Levises, bloomers* 'the pants designed by Amanda Bloomer'.
- SMTH, whole, an article of clothes ***has*** THAT MANY SMTH, parts + PARTS ***are*** SUCH: length – *shorts, briefs*; width – *slacks* (pants).

- SMTH, whole, an article of clothes ***has*** THAT MANY SMTH, parts + SMTH, whole ***is*** SUCH: material – *jeans, denims, leathers* (pants)
- SMTH, whole, an article of clothes ***has*** THAT MANY SMTH, parts + SMTH, whole ***is*** THERE: place, body part – *bottoms, breeches* (pants).
- SMTH, whole, an article of clothes ***has*** THAT MANY SMTH, parts + SMTH, whole, object ***is acted upon / worn*** THERE: geographical region – *Bermudas* (pants).

The meaning of a motivator, or a signifier, compresses information about the things, their properties, and vital relations. This information represents a partial cross-space mapping between the input spaces – those of the thing which is an article of clothes, and the other things related to it (parts of the clothes, a producer and wearer of the clothes, a place where the clothes are worn, etc.). The mapping is partial because of the selective choice of the things' properties represented in the onomasiological structure, which, therefore, can be considered as a blend.

5. Conclusion

The analysis of derived names attests to the feasibility of CIT's insights. The issue which was not discussed in this paper was the "generic space" which maps on each of the inputs and contains what the inputs have in common. In CIT, the genetic space is interpreted as a "shared structure", and the discussion as to where this structure is, and what it is like is still in progress. To contribute to this discussion, I want to suggest that the generic space is a rather abstract conceptual structure similar to the ones observed in onomasiological schemas of motivators (e.g. SMTH is SUCH or SMTH-whole has SMTH-parts). The above analysis shows that such schemas are fragments of larger schemas that construe the meaning of a linguistic expression. In Langacker's terms, the onomasiological schema structures "the profile" within "the base" as the array of conceptual content evoked by a linguistic unit. The base is also structured, and the construal of this structure is an evolving process, which can go on and on. However, the instruments for such construing seem to be limited, and the basic frames presented in this paper may be possible candidates for the role of such instruments.

The term "base" as it is interpreted by Ronald Langacker sounds similar to what the Odense group call the "Base space". The meanings of the terms can be also matched provided we maintain that the Base space comprises the knowledge structures that organize the conceptual content. Such structures are "shared" be all humans and agree with the characteristics of the Base space provided by Gitte Ramussen & Anders Hougaard (2002): the Base space is neither a speaker's space nor a hearer's space; it is a shared space – it is socially shared, generated and generating cognition. Social sharedness goes for the whole network model, not just the Base space. The Base space is a mental space. Mental spaces differ along many types of gradients, but all of them represent partial conceptual structures that people are claimed to set up and connect in various ways.

These theses bring us back to Bertrand Russell's (1997: 103-106) considerations about "the community's" and "person's" conceptions of space, time, and objects. According to Russell, the entities of community's conception are not perceptual, but mental, and the two people may have one and the same idea, provided it is not concrete, but somewhat abstract.

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Thought experiments, conceivability arguments and conceptual blending

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Abstract

Thought experiments flourish in contemporary analytic philosophy. In some domains, such as the philosophy of language and the philosophy of mind, it even looks as if only thought experiments have demonstrative force. Recently developed normative theories of philosophical thought experiments (e.g. Häggqvist 1996) do not draw sufficiently from cognitive theories of counterfactual reasoning. E.g., with the exception of Yeng's analysis of the Chinese room argument (Yeng 2000), the metaphilosophical ramifications of the multiple space model of conceptual integration (Fauconnier 1997; Turner 1996) remain unexplored.

Conceivability arguments constitute a class of philosophical arguments based on thought experiments; they typically require the thought experimenter to infer the possibility of the initial counterfactual situation from its conceivability. Some philosophers argue that all conceivability arguments are unsound, since no kind of conceivability warrants possibility. In this paper, I will argue, by contrast, that the multiple space model of conceptual integration can at once explain the success of some conceivability arguments and the failure of others. For that purpose I will analyze a famous argument against materialism: the argument from philosophical zombies (Chalmers 1996). Although composition and completion of the blend are fairly unproblematic, its elaboration poses some conceptual difficulties.

1. Thought experiments and conceivability arguments

Many philosophers are eager to offer definitions of theoretically important concepts in terms of necessary and sufficient conditions. As a matter of fact, according to an outdated metaphilosophical view, such definitions are precisely what philosophers *can* and *should* aim for. The method of *conceptual analysis* involves, more specifically, (1) offering a definition in terms of necessary and sufficient conditions, (2) considering a counterexample which either shows that one of the proposed conditions is not necessary or that the conditions are jointly insufficient, and (3) finetuning the proposed definition so that it can meet the putative counterexample.

Some philosophers consider the method of conceptual analysis to be outdated for two reasons. Firstly, from cognitive psychology they have learned that people do not represent concepts with simple sets of necessary and sufficient conditions. Secondly, the unease about the use of intuitions is growing among these philosophers and conceptual analysis relies almost exclusively on intuitive judgments people make regarding what falls under a given concept.

Other philosophers, by contrast, continue to aim for definitions of theoretically important concepts in terms of necessary and sufficient conditions. This is illustrated by the popularity of thought experiments in analytic philosophy: many of these imaginary cases are precisely designed to show the flaws in traditional analyses of concepts. E.g., Frankfurt's *Decision Inducer* is designed to show that the possibility to have acted otherwise is not, as is traditionally assumed, a necessary condition for a person to be morally responsible for an action s/he performed (Frankfurt 1969). And Gettier's famous *Job Seekers* is supposed to show that truth, justification and belief are not sufficient for knowledge, thereby discrediting a long-standing definition of knowledge (Gettier 1963).

Part of the philosophical debate on thought experiments too, turns around diverging intuitions about what counts as a thought experiment and what doesn't. However, for the reasons mentioned above I do not consider such exercises to be very useful. Moreover, 'thought experiment' is a technical term, so that the origin of our intuitive judgments about what falls under the concept and what doesn't, is unclear. And more importantly, in the case of technical terms we are more or less free to define the term for the purpose at hand.

Here we will consider thought experiments as they are used in philosophy, thereby setting aside examples from the natural and social sciences. We will focus, more specifically, on the role that thought experiments play in *theory choice*, i.e., in arguments for or against philosophical theories.

The simplest form such a thought experiment can have is the following:

(1) x is possible
(2a) we can infer from T_a that x is impossible
or
(2b) we cannot infer from T_b that x is impossible

(3a) T_a is false
or
(3b) it is possible that T_b is true

Here x is a state of affairs and T_a and T_b are theories. In case (a) T_a can be dismissed because the theory is *incompatible* with the possibility of x. In case (b) the possibility of x doesn't constitute a problem for T_b; the theory is *compatible* with the possibility of x.

Most thought experiments have a more sophisticated structure. In a thought experiment one typically starts from a state of affairs which is possible, and subsequently one imagines what would happen if that initial state of affairs would be realized (Doorman 1989: 162). In this way one arrives at a state of affairs y which is possible (in the same sense as x) and which is then found to be compatible or incompatible with the theory at issue. So most thought experiments have the following structure:

(1) x is possible
(2) if x then y
(3) y is possible
(4a) we can infer from T_a that y is impossible
or
(4b) we cannot infer from T_b that y is impossible

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(5a) T_a is false
or

(5b) it is possible that T_b is true

Conceivability arguments constitute a class of philosophical arguments based on thought experiments. In a conceivability argument the possibility of the initial state of affairs is based on its conceivability. So for thought experiments with a rather simple structure we get the following:

(1) x is conceivable

(2) if x is conceivable, than x is possible

(3) x is possible

(4a) we can infer from T_a that x is impossible

or

(4b) we cannot infer from T_b that x is impossible

(5a) T_a is false

or

(5b) it is possible that T_b is true

One might of course object that in any thought experiment the possibility of the initial state of affairs is based, at least partly and implicitly, on its conceivability. However, the defining characteristic of a conceivability argument is that the possibility of the initial state of affairs is only restricted by *internal coherency*. A 'friendly librarian' is internally coherent since no element of the concept 'librarian' excludes that an instance of it can be friendly. A 'married bachelor', by contrast, is internally incoherent since the concept 'bachelor' excludes that instances of it can be married.

Obviously, a state of affairs can meet more criteria than internal coherency alone. The notion 'friendly librarian' is not only internally coherent; the laws of nature do not exclude the possibility of some librarian being friendly. Everything which is possible given the laws of nature is *nomologically possible*. Everything which is possible in the sense of being internally coherent is *logically possible*.

Note that everything which is nomologically possible is logically possible, but not vice versa. If we want to stress that a state of affairs, though internally coherent, is not possible in a more substantial sense of the term (e.g., nomologically possible), we say that that state of affairs is *purely logically possible*.

So, basically, conceivability arguments are arguments from logical possibility. More sophisticated conceivability arguments have the following structure:

(1) x is conceivable

(2) if x is conceivable then x is purely logically possible

(3) x is purely logically possible

(4) if x then y

(5) y is purely logically possible

(6a) we can infer from T_a that y is logically impossible
or

(6b) we cannot infer from T_b that y is logically impossible

(7a) T_a is false

or

(7b) it is possible that T_b is true

Now that we have characterized thought experiments and conceivability arguments, we can turn our attention to a famous conceivability argument from the metaphysics of mind.

2. The argument from philosophical zombies

In *The Conscious Mind*, David Chalmers (1996) offers an overview of the problems materialists face. Two of the arguments Chalmers discusses are arguments from conceivability: the argument from philosophical zombies and that from spectral inversion. In this section, I will briefly paraphrase his version of the argument from philosophical zombies. In the next sections, the replies it evoked will be discussed.

Suppose there is a world in which your counterpart, i.e. a creature which is molecule for molecule identical to you and identical in all the low-level properties postulated by a completed physics, is now reading this paragraph from "Thought experiments, conceivability arguments and conceptual blending". Your counterpart seems to react to it in just the same way as you do: if you start laughing because you find one excerpt laughable, your counterpart is laughing too. The only difference is that your counterpart laughs without actually finding the excerpt laughable. Your counterpart has no "phenomenal consciousness". She lacks conscious experiences altogether). She is a philosophical zombie.

According to Chalmers, the fact that we can conceive of such a zombie twin, or at the global level of a zombie world, implies that materialism is false. His argument can be paraphrased as follows:

(1) philosophical zombies are conceivable

(2) if philosophical zombies are conceivable, they are purely logically possible

(3) philosophical zombies are purely logically possible

(4) we can infer from materialism that philosophical zombies are logically impossible

---

(5) materialism is false

For our purposes it doesn't matter whether premise (4) is true, though many philosophers argue that Chalmers is wrong in claiming that materialists should be able to exclude the purely logical possibility of philosophical zombies (see, e.g., Raymore 1998). Instead, we discuss in the next sections premises (2) and (1) respectively.

3. Conceivability and possibility

In section 1, I defined conceivability arguments as arguments from logical possibility. It is worthwhile to note that Chalmers too uses these notions as interchangeably. However, this terminology is partly misleading, since one of the traditional criticisms of conceivability arguments in general, and of the argument from philosophical zombies in particular, contests the premise that the conceivability of some state of affairs implies its possibility (Loar 1990; Hill 1998; Hill en McLaughlin 1999; Loar 1999). Obviously, this question cannot be answered by stipulating that conceivability gives us access to a special kind of possibility, e.g., logical possibility. Because then the question whether conceivability implies possibility could and should be rephrased in terms of the question whether a state of affairs which is purely logically possible is really possible after all, i.e., whether a state of affairs which is purely logically possible constitutes a genuine possibility. It is not my intention to discuss this fundamental issue in the metaphysics of modality here. However, the following excerpt from Bernadete (1962) might illustrate the kind of worries uses of so-called purely logical possibilities evokes:

> But is logical possibility a kind of possibility? Is counterfeit money a kind of money ? Is a dead man a man? Can chess be played without the queen? Is it then *chess*? Suppose that in common discourse someone were to suggest that there is, after all, a sense in which it is possible that I might lift the Great Pyramid, and upon being greeted with our astonishment, he were to reply that it is *logically* possible. We should portest, if we were simple men, that this was a kind of possibility that we had never heard of before. Has the philosophers discovered a new kind of possibility? Has he perhaps discovered that what hitherto has always been regarded as quite impossible is really possible after all? Or is logical possibility simply synonymous with freedom from contradiction? This last suggestion is too banal to be accepted as definitive. Freedom of contradiction is submitted as a *ground* establishing possibility. The one is held to entail the other. How is that inferential leap negotiated? (Bernadete 1962: 346-7).

The relation between conceivability and possibility is an old philosophical riddle. It might surprise readers who are only familiar with his anti-metaphysical pronouncements, but David Hume actually held that these notions coincide. Take, e.g., this excerpt from his *Treatise of Human Nature*:

> 'Tis an established maxim in metaphysics, that whatever the mind clearly conceives includes the idea of possible existence, or in other words, that nothing we imagine is absolutely impossible. We can form the idea of a golden mountain, and from thence conclude that such a mountain may actually exist. We can form no idea of a mountain without a valley, and therefore regard it as impossible.

The last sentence is a bit troubling, since most of us can easily imagine a mountain without a valley. Arthur Pap offers the following explanation of this mistake: «This seems to be a slip of the pen, copied from Descartes, for 'Valley without a mountain'» (Pap 1958 : 81).

Nevertheless, it is clear that Hume embraces two theses. On the one hand he embraces the thesis that we can infer the possibility of a state of affairs from its conceivability. On the other hand he claims that if a state of affairs is inconceivable, it is impossible.

These principles, however, are not that «established» in metaphysics as Hume suggests. Many philosophers, such as John Stuart Mill and Thomas Reid, attempt to show that our capacity or incapacity of conceiving something has very little to do with its possibility. On the other hand, the principles at issue are often tacitly assumed. Stephen Yablo (1993) stresses this ambivalence:

> [P]essimism about conceivability methods has been a consistent theme in philosophy. (...) Yet throughout this complicated history runs a certain schizophrenia in which, the theoretical worries forgotten, conceivability evidence is accepted without qualm or question (Yablo 1993: 2).

Nowadays, there is at least a consensus that one cannot maintain the inconceivability thesis, i.e. the thesis that inconceivability implies impossibility. The usual objection to it is that it rests on an unrealistic assessment of our cognitive capacities. Paul Tidman (1994) puts it as follows:

> Why should we suppose that we are able to conceive of every possibility? Are there not possibilities beyond our ability to fanthom? If so, we cannot reasonably infer impossibility from inconceivability, since our inability to conceive of a state of affairs may be due only to a limitation on our part. Our inability to conceive, that is, may be due to factors having absolutely nothing to do with the modal status of the states of affairs in question (Tidman 1994: 297).

Tidman (1994) continues with an interesting argument against the conceivability thesis, i.e. the thesis that conceivability implies possibility. He considers several conceptions of conceivability, such as imaginability, understandability, believability, etc. He convincingly argues that, given any of these conceptions of conceivability, there are clear counterexamples to the conceivability thesis. Moreover, he shows that any attempt to explain away these counterexamples in order to save the conceivability thesis rests on epistemological circularity.

So one of the problems facing conceivability arguments in general and the argument from philosophical zombies in particular, is the fact that they rely on the suspect thesis that conceivability implies possibility. Moreover, it is completely useless to try to solve this problem by claiming that conceivability gives us access to a special kind of possibility, e.g., purely logical possibility, because then the question arises whether a state of affairs which is possible in this special sense, is really possible after all.

4. Conceivability arguments and conceptual blending

Another reply to the argument from philosophical zombies is more interesting for our purposes. Some philosophers question whether philosophical zombies are in fact conceivable (Dennett 1995; Marton 1997; Cottrell 1999; Shoemaker 1999). In this section, I will use the multiple space model of conceptual integration to pinpoint the alleged difficulties in conceiving of philosophical zombies.

Chalmers claims that, at least at face value, philosophical zombies are conceivable and thereby logically possible: "it certainly seems that a coherent situation is descibed; I can discern no contradiction in the description" (Chalmers 1996: 96). He then proceeds by arguing that the burden is on the opponent to give some idea of where the contradiction might lie in the apparently quite coherent description:

> In general, a certain burden of proof lies on those who claim that a given description is logically *impossible*. If someone truly believes that a mile-high unicycle is logically impossible, she must give us some idea of where a contradiction lies, whether explicit or implicit. (…) If no reasonable analysis of the terms in question points toward a contradiction, or even make the existence of a contradiction plausible, then there is a natural assumption in favor of logical possibility (Chalmers 1996: 96).

As a matter of fact, Dennett (1995) makes the existence of a contradiction plausible. He argues that people who claim to be able to conceive of philosophical zombies often fail to do so. The very idea that philosophical zombies lack phenomenal consciousness is typically conceived of in terms of the special kind of behavior this condition would bring about. This, however, is inconsistent with the requirement that the behavior of philosophical zombies is exactly the same as the behavior of their real-world counterparts.

If we analyze the thought experiment in terms of the many space model of conceptual integration, we can at once explain its vices and virtues. The thought experiment involves two input mental spaces. The first contains an individual human being with particular looks, a specific kind of behavior, phenomenal consciousness, etc. The other contains an inanimate object with a particular shape, moving along a specific trajectory, etc.

Counterparts in the input mental spaces are connected by a cross-space mapping. It connects, e.g., the looks of the human being with the shape of the object and her behavior with its trajectory.

There is selective projection to the blend (i.e., the zombie twin). The looks (or shape) and the behavior (or trajectory) are projected to the blend. However, the phenomenal consciousness of the individual human being, isn't.

Elaboration is supposed to develop the blend through imaginative mental simulation according to the principles and internal logic of the blend. However, "running the blend" poses conceptual difficulties. Apparently, there is a tension between the stipulated "absence of phenomenal consciousness" and the required "normal behavior". Thought experimenters cannot help to understand the absence of any real conscious experience otherwise than in terms of abnormal behavior.

This was not apparent at the stages of composition and completion. Thought experimenters can perfectly well imagine a *static* zombie twin, because at that stage the relevant properties (i.e., "absence of phenomenal consciousness" and "normal behavior") are only abstractly specified. But as soon as they consider the *dynamics* of the blend, the tension arises.

As a matter of fact, Chalmers tries to anticipate these problems by pointing out the differences between philosophical zombies and the zombies found in Hollywood movies: whereas the former lack experience, the latter have typically little capacity for introspection and lack a refined ability to voluntarily control behavior. So thought experimenters trying to conceive of philosophical zombies should forget about the strange behavior they associate with zombies in Hollywood movies. And, Chalmers continues, perhaps it is not surprising that Hollywood has not

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taken interest in philosophical zombies, "as there would be obvious problems with their depiction" (Chalmers 1996: 95).

Unfortunately for his argument, the "obvious problems" Hollywood would have with depicting philosophical zombies, are exactly the same problems thought experimenters, who try to conceive of philosophical zombies, face. In any case, to conceive of a state of affairs such as a zombie twin (let alone a zombie world) in order to argue for or against a philosophical theory, requires more than just noting that, at face value, there is no contradiction in the description.

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Compromise in Multi-Agent Blends

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Abstract

A blend is typically conceived as a systematic integration of conceptual spaces by a single cognitive agent for a particular pragmatic purpose. We consider here an interesting class of 'macro' blends that involve multiple cognitive agents, each of which contribute different spaces to the integration. Mythology is one such 'macro' type of blend, since rich mythic pantheons such as that of Hellenic Greece arise not as a product of individual design but from a complex cultural blend of different peoples with differing values and deities. Such multi-agent blends observe all the optimality principles of integration, but additionally exhibit pragmatic compromises that reflect the interactions of the social parties to the blend. In effect, a multi-agent conceptual blend is a conceptual by-product of a 'physical blend' of different cultural agents with different social goals. Taking classical mythology as our context, we identify a number of projection and composition strategies that operate within a multi-agent blend when those agents have different, often adversarial, preservation goals for the conceptual spaces they contribute.

1. Introduction

Blend theory is an intriguing model of conceptual integration that is perhaps capable of revealing as much about human culture as human cognition. This should not surprise since blend theory has proven itself to have wide-ranging applicability to the representation of both linguistic and non-linguistic aspects of cognition (e.g., see Fauconnier and Turner, 1998), and culture is, in large part, a product of social cognition. In this paper we consider the cultural forces external to cognition that shape the process of conceptual integration in a multi-agent setting. Most work on integration considers blends as the product of single agents, and considers multiple agents only to the extent that a blend is created by one agent for the comprehension of others. In contrast cultural blends are the result of a community process in which many voices interact over time, and we contend that this interaction imposes a variety of unique pragmatic forces on the development of a blend.

We choose as the vehicle of our research the process of blend creation in polytheistic mythologies, and use the Greek myths as a paradigmatic source. Classical Greek, or Hellenic, mythology primarily differs from the major monotheistic religions in its diverse cast of deities, each of which personifies some universal of human experience within an overall family structure. It is tempting to accept this diversity at face value as a complex creation of a single culture, but it is in fact the result of many successive blendings of the individual belief systems of different peoples, each of which contributes a new character or story to the overall blend. The external forces that motivate and shape the blends are the familiar ones of war, conquest, religious suppression and cultural assimilation. These grand themes allow mythology to serve as a magnifying glass through which the microscopic workings of conceptual blending can be seen in macroscopic terms. The narrative form of mythology is an ideal subject for blend-theoretic analysis, since blending theory has been successfully applied to the understanding of narrative structure by a number of authors (e.g., Oakley, 1998; Veale, 1997). Indeed, we argue that scholars of myth have long used their own equivalent of blending theory's optimality principles of 'web', 'unpacking' and 'good reason' to deconstruct the social purposes and history behind myths (e.g., see Graves , 1955).

A mythic blend may sometimes originate with a single agent, such as a mythographer, but its survival depends on acceptance by a whole population of agents, where each agent may have different cultural purposes for the blend. These purposes sometimes conspire, sometimes oppose, to shape the blend. Opposition can cause the optimality principles of blending to be overridden by a more pragmatic set of 'optimality compromises', and by understanding these compromises, we can better understand the forces that shape all multi-agent blends, whether purely linguistic or conceptual.

2. Historical Context: Hellenic and pre-Hellenic Greece

The Hellenes were a patriarchal collection of peoples who settled Greece in waves during the first two millennia BCE, first during the Aeolian and Ionian migrations, and later during the more aggressive Achaean and Dorian migrations. They brought with them a king-based social system and male-centered mythology to a land that worshipped a female deity, the Great Goddess, in a variety of guises, and whose priestesses were the root source of social power (see Frazer, 1922; Graves, 1947; Harrison, 1991). Pre-Hellenic society had kings too, of course, but these were ceremonial or 'sacred' positions chosen on the basis of competition and limited to a fixed term of office, a 'Great Year', after which the king was ritually sacrificed. The earlier Hellenic migrations altered Greek culture from the inside, peaceably settling the land and adopting both local customs and the worship of different divine aspects of the Great Goddess. The later invasions were more aggressive and altogether more destructive of the local culture. The end result of the Hellenic migrations and invasions was a patriarchal society that was ruled by a king and which worshipped the now familiar Olympian system of gods and goddesses. In this system the pre-Hellenic female deities still played a significant role but in a diminished position of power relative to the dominant male gods, such as Zeus, Poseidon and Hades, that the Hellenes imported with them.

Though ruled by male kings, the Pre-Hellenic peoples of central Greece and the Peloponnese were a matriarchal culture in two important senses: first, many were matrilineal, in that men and women traced family names through their mothers rather than their fathers; second, and more importantly, the major religious rituals were controlled by priestesses rather than priests (Graves, 1955). Because natural processes involving the weather, the land and the sea were understood in terms of supernatural influences, these priestesses thus wielded significant social and political power, by shaping the rules governing the catching of fish, the sowing and harvesting of crops, and the herding of animals. They also governed the rites in which the sacred king was chosen and later sacrificed after a reign of one 'great year'. The godhead worshipped by these peoples was a female deity known as the Great Goddess, and her priestesses served as protectors of her divine mysteries (see Harrison, 1991). This role required them to practice elaborate, and often bloody, rituals in which garish masks were worn to frighten off the uninitiated. In accentuating the mysteries of the divine, these peoples considered the dimly-lit moon a more potent celestial symbol of the Goddess than the brightly luminous sun, and many pre-Hellenes worshipped the deity in her guise as Moon-Goddess. Since the moon and sun are implicated in the changing of the seasons and the variation of weather and tidal patterns, the Great Goddess was also strongly identified with the Earth, and with its natural personification as a Mother Earth. As a representative of all three celestial bodies, the Goddess assumed a tripartite representation that lead to her identification as a Triple Goddess of the sun, moon and Earth.

Tripartite symbolism is present at different levels in the Triple Goddess, since each celestial aspect is also associated with three seasonal changes or phases; for the moon, these phases are new, full, and old, and metaphorically allow the Goddess to represent the three phases of womanhood – maiden (pre-sexual being), nubile woman (sexual being) or nymph, and crone (post-sexual being); for the sun and earth, these phases are Spring, Summer and Winter, again metaphoric of maiden, nymph and crone.

Different regional cults in this pre-Hellenic society worshipped different aspects of the Triple Goddess, often under different names. It is this essential polymorphism of the Goddess, combined with the variety of gods of the Hellenes, that leads to the eventual richness of the Olympian system through a process of successive conceptual blending. For example, the Goddess was worshipped as Hera in the city of Argos, which was the center of the pre-Hellenic Mycenaean culture; in Athens she was worshipped as Athene, the goddess of Wisdom who is attributed with the first domestication of horses and cultivation of the olive tree; and in Delphi she was worshipped as Gaia, or Mother Earth, and had a temple there whose priestesses were famed for their powers of prophecy. This temple was later overrun by Hellenes and claimed for their male god Apollo, in an action that typified the changes wrought on pre-Hellenic society by successive migrations.

3. Blends and Myths

Myths are stories that develop to explain social, political, or religious aspects of a culture, and the conceptual integration we observe in these myths is often a faithful mirror of the social integration of the underlying culture. Indeed, myths exhibit blending at different levels. At one level, a myth is a blend of the physical and the metaphysical, an expression of belief in supernatural forces and eternal mysteries couched in the concepts of everyday life. The gods of mythology represent eternal themes such as love and hate, motherhood and fatherhood, good and evil, chaos and order, yet do so by personifying these themes as people with extraordinary powers and very ordinary desires and foibles. At another level, a myth can blend these supernatural deities with contemporary political and social events to illustrate the inevitability of certain outcomes or to capture some universal qualities of normal life. The word 'blend' comes naturally to mind when describing these uses, but if we are to employ the cognitive machinery associated with conceptual integration theory it is important to identify this blending as true conceptual integration, and not a simple jumble of concepts. So to analyze mythology in terms of conceptual integration, we need to observe the following signature characteristics of blending in myths: selective projection of conceptual structure from multiple input spaces; an internally-consistent logic that frequently differs from that of the contributing spaces; emergent structure that derives from none of the input spaces; conceptual relations from the input spaces to the blend, allowing an agent to trace the course of an idea from its origins to its realization in the blend; and conceptual relations from the blend space back to the inputs that contributed it, allowing an agent to trace the development of a concept in the blend back to its origins.

Political cartoons and creative advertising are paradigmatic examples of the type of blend that most overtly exhibit these characteristics, and both types have been studied extensively (e.g., Veale 1999, Turner 1999). Political cartoons, for instance, combine a space of contemporary political events with a space of highly visual and iconic representations, to produce a new conceptual space – the blend space of the cartoon – that has a satirical logic of its own. The cartoon invites us to make inferences in this new space, in fact the humor of the image often depends on this inference making, yet though the emergent inferences follow naturally within the blend space of the cartoon, they can seem absurd if projected back into the original input space of politics. Nonetheless, political cartoons do allow the observer to traverse a web of relations from the blend space back to the input spaces, and again, the meaning of the cartoon relies vitally on this ability. It is vital, for instance, that the observer recognizes a sickly representation of Uncle Sam, lying in a hospital bed with a downward-pointing graph of the NASDAQ as his hospital chart, as an allusion to the ailing American economy. Without this recognition, the cartoon communicates no political meaning. The identification of images and references allows the emergent inferences drawn in the cartoon to be projected back to the political input-space, not in a literal form (which may appear absurd there), but in an unpacked form where they can be interpreted in purely political terms. The unpacking of this example may lead to an inference in the political input-space that the American economy needs the economic equivalent of hospitalization if it is to recover.

The central myths of classical Greek mythology also exhibit these characteristics. Myths occupy a blend space into which are projected contemporary political and religious events, and within which new logical inferences can emerge. These inferences lead to the participating deities assuming distinct lives and personalities of their own. For example, Athene bursts whole-formed into the world from Zeus's forehead, and because the head is the center of the intellect, she becomes identified as the goddess of wisdom, and because of the parthogenetic nature of her birth, she also becomes identified as a goddess of chastity. In this way, deities become associated with specific symbols, realms of power and geographic regions, and these associations comprise a network of relationships that allow elements of a blend to be unpacked into their original forms. Thus, since Poseidon is considered master of the seas, any myth involving him can generally be interpreted in terms of the governance of the rites and economics of the fishing industry, such as it was in Hellenic times, while a feud between he and Athene can be unpacked as a power-struggle for Athens between worshippers of the Goddess and maritime Aeolian settlers. Likewise, specific female deities can be unpacked into different aspects of the Goddess, thus linking specific pre-Hellenic cults to the blend. Certain code-words also facilitate the unpacking process: the 'seduction' of nymphs and the marriages of goddesses are frequent euphemisms for acts of aggression toward the priestesses of a particular cult of the Great Goddess. The identity of the godly aggressor can guide the unpacking process even more, to reveal a historic event of aggression by a specific Hellenic people against a specific pre-Hellenic cult, and sometimes, even a specific temple of the cult can be implicated.

4. Historical versus Psychological Interpretation

This perspective on the role of blends in mythology assumes that many myths have a strong grounding in historical fact, and that this grounding can be revealed via the unpacking process. This 'historical perspective' is advocated by Graves (1955), a scholar of antiquity who claims *"A large part of Greek myth is politico-religious history. [...] Greek mythology was no more mysterious in content [to contemporary peoples] than modern election cartoons"*. But there is another perspective, one we can dub the 'psychological perspective', that explains myths as the expression of universal facets of human psychology, or spontaneous products of the collective unconscious. This latter hypothesis suggests that myths are fundamental statements about the human psyche rather than about human history, thus explaining the universality of many mythological themes (e.g., Campbell, 1968, is a major exponent of this view). However, it is the least scientific theory of the two since it is not falsifiable, while the historical perspective is at least falsifiable to the extent that is relies on archeological evidence for corroboration.

Nonetheless, these perspectives need not be considered antithetical. Consider that a myth can be analysed at two levels: the inner level is that of the plot-unit, a conceptual structure that encodes some abstracted sense of cause and effect within a narrative, while the outer level is that of a visual representation which gives the myth its visceral imagery. We suggest that the historical and psychological perspectives correspond to these two levels of representation. Consider again the myth of Athene, who burst forth fully-formed from Zeus's forehead. Zeus had previously swallowed the goddess Metis while she was pregnant with Athene, but the young goddess was not as easy to contain as her mother. Her eruption from Zeus's forehead was facilitated by the titan Prometheus, who had to strike open the god's head with an ax to relieve him of a terrible headache. The outer level comprises the image of one god eating and consuming another, with the subsequent regurgitation of the consumed deity. This is a popular theme in different mythologies – indeed, Zeus's own father had also eaten his children to prevent them rising against him. The inner level comprises a causal chain of the form *Suppression* → *Resistance* → *Uprising* → *Compromise* and corresponds to the historical events surrounding an attempted suppression of a cult of the Goddess; when the suppression failed and the Goddess continued to be worshipped, she was instead incorporated into the Olympian system as a dutiful daughter of Zeus. The outer level communicates this causality using the corresponding chain of metaphoric imagery *Swallowing* → *Headache* → *Regurgitation* → *Dutiful daughter*.

5. The Interaction of Culture and Mythology

It is vital that we distinguish the different levels of a cultural blend if we are to avoid category errors. At one level we can distinguish the actual blend of cultures (BoC) that emerges when two or more cultures come together and interact. For instance, the culture that arose as the result of the Aeolian migration into pre-Hellenic Greece is an actual blend of people, customs and social norms. At a conceptual level, we can distinguish the blend of myths (BoM) that arises to explain or justify the social changes – such as a shift from matrilinearity to patrilinearity – that occur within the blend of cultures. For instance, the marriage of Hera to Zeus belongs to this category of blend. Both categories of blend are causally related, with the blend of myths arising out of the logically-prior blend of cultures, and this causality carries across to the component spaces of each blend category. Thus, the input and blend spaces of a BoM are related to the corresponding spaces of the underlying BoC. In cognitive terms, this relatedness is best thought of as a metaphoric correspondence, and is illustrated as such in Fig. 1.

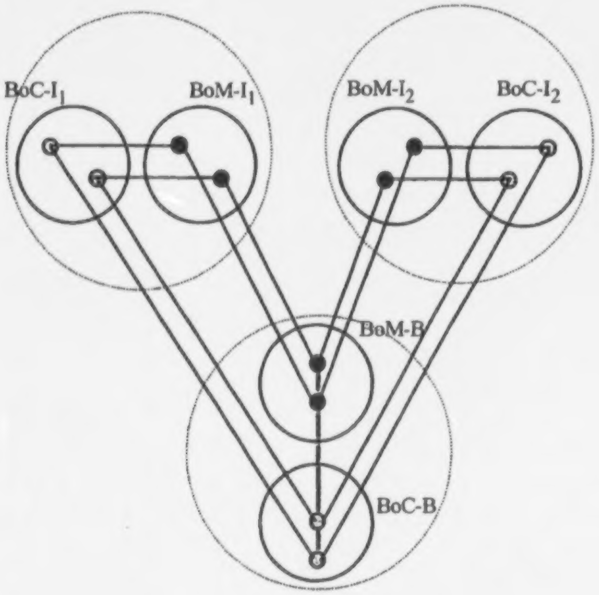

Fig 1: The relationship between a Blend of Cultures (BoC) and a Blend of Myths (BoM) when two cultures C_1 and C_2 merge, and give rise to a blended mythology BoM-B.

Fig. 1 presents this situation as nesting of blends, with the BoM constrained by an external BoC. In the outer blend the input spaces BoC-I_1 and BoC-I_2 represent a conceptualization of the salient elements of the cultures C_1 and C_2, which for some socio-political reasons are about to be blended, while in the inner blend BoM-I_1 and BoM-I_2 represent the corresponding mythic structures of these cultures. BoC-I_1 is metaphorically and metonymically related to BoM-I_1 — this relationship might, for instance, metaphorize the patrilineage of the culture C_1 as a dominant male god in BoM- I_1. The relationship between BoC-I_2 and BoM-I_2 is similarly metaphoric, e.g., metaphorizing the matrilineage of the culture C_2 as a dominant female god in BoM- I_2. The space BoC-B represents the physical society that arises from a blend of C_1 and C_2 (e.g., a patriarchal society with some vestiges of matriarchy), while BoM-B contains the myths that describe this blended culture (e.g., a mythology in which the dominant female goddess is subservient in marriage to the dominant male god).

Note that in most cases, the spaces BoC-I_1, BoC-I_2, BoM-I_1 and BoM-I_2 will themselves correspond to the blend spaces of earlier cultural and mythological blends, since rich mythologies like the Olympian system do not emerge fully-formed from a single blend. Note that the space pairings BoC-I_1 & BoM-I_1, BoC-I_2 & BoM-I_2 and BoC-B & BoM-B can each be considered as logical units in themselves, each comprising a blend of cultural and mythic elements not unlike the blend of political and iconic elements that is used to create political cartoons. This allows the schematic structure of Fig. 1 to be interpreted both as a *blend-constrains-blend* construction as well as a *blend-of-blends* construction. Each perspective offers its own advantages and advantages, but both are fundamentally yield the same conceptual results.

The term BoC can refer both to the actual blend of peoples, customs and norms arising from cultural assimilation, and to the conceptual model of this assimilation. Note that the former is a physical and social construct, while the latter is a conceptual construct. This places limits on the interpretation of the BoC as a conceptual blend, since its conceptual structure is a representation of the beliefs and practices of a whole population of cognitive agents rather than those of a single individual. As such, the BoC need not exhibit the conceptual coherence of a true conceptual blend, and thus may not observe the optimality principles that are characteristic of conceptual integrations. For instance, the web and unpacking principles may not apply, since there is no general imperative that a culture maintain a coherent network of relations back to the sources of its customs and laws. In fact, some cultures make deliberate efforts to obfuscate these sources by undermining or destroying the artifacts and rituals that perpetuate this network of relations, and to some extent this is precisely what the more aggressive Hellenic migrations attempted to do in ancient Greece.

Nonetheless, the BoM exists as a purely conceptual construct and can be analysed as a true conceptual blend. The constraints placed by the BoC-B upon the BoM-B thus allow the BoC to *borrow* the network of inter-space relations of the BoM, allowing a scholar to effectively exploit the optimality principles applying to the BoM within the context of the BoC. That is, to unpack some aspects of a blended culture BoC-B, one should first map those aspects into the corresponding blend space of the mythological blend BoM-B, and work with the optimality principles in the context of the BoM network. Any unpacking insights from this network can then be applied back to the cultural context, by once again negotiating the mappings from the BoM to the BoC, this time in reverse. The reliability of this process is largely determined by the richness and transparency of the mappings linking the spaces of the BoC and the BoM. For this reason, cultural analysis via mythology is a process heavily grounded in metaphor and fraught with the possibility of misreading. As noted by Graves (1955), it is a process that is most reliably conducted in the falsifiable context of specific archeological evidence.

Consider as an example a scholar in Periclean Athens, hundreds of years after the Hellenic migrations into Greece. Though Athens is dedicated to its patron deity, the female goddess Athene, it is nonetheless a patriarchal society in which women cannot vote and where descent is patrilineal. Such a scholar may look to the myths of the culture to determine the roots of the city's patriarchal system, either to prove a hypothesis or to bolster a theory grounded on other evidence. By considering the myths of Athenian culture, the scholar traverses the first link from BoC-B to BoM-B (see Fig. 2).

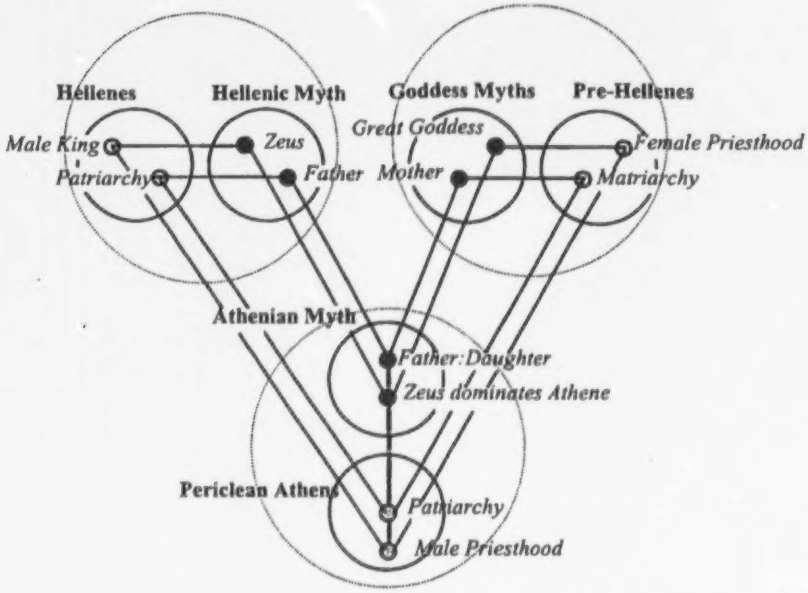
Hellenes
Hellenic Myth
Goddess Myths
Pre-Hellenes
Male King
Zeus
Great Goddess
Female Priesthood
Patriarchy
Father
Mother
Matriarchy
Athenian Myth
Father:Daughter
Zeus dominates Athene
Periclean Athens
Patriarchy
Male Priesthood

Fig 2: Periclean Athens understood as a blend of Hellenic and pre-Hellenic cultures.

In BoM-B, the scholar notes the central myths pertaining to Athene, and the most central of these is that concerning her parentage by Zeus. Greek myth tells us that Athene sprung wholly-formed and armored from the forehead of Zeus, after Zeus had swallowed her troublesome and pregnant mother, Metis. Unsuccessful attempts to digest Metis fully lead to a dreadful headache for Zeus, which was only relieved once Prometheus split open his head to allow Athene to spring out. This myth has several key implications: Zeus attempted to suppress Metis, and indirectly, Athene; Zeus was successful in suppressing Metis, but not Athene; the rebirth of Athene from Zeus attributes her parentage to Zeus; as her parent, Zeus is superordinate to Athene; by springing from Zeus's forehead, Athene becomes associated with wisdom, strategy and forethought; the forceful nature of her birth suggests some antagonism between father and daughter; and finally, the virginal nature of her birth allows her to represent an ideal of maidenhood.

Exploiting the optimality principles of web and unpacking within BoM-B, the scholar traces Zeus back to BoM-I_1, the myth-space of the

Hellenes, where Zeus is considered the father god, and traces Athene back to BoM-I_2, the myth space of pre-Hellenic moon-worshipping culture of the Goddess, where Athene is the maiden form of the Goddess herself. From BoM-I_1, the scholar exploits established metaphors to trace Zeus back to the concepts King and Father in BoC-I_1, and from BoM-I_1 traces Athene to the concepts Priestess and Mother in BoC-I_1. From and , the scholar can project forward to BoC-B, and see that the patriarchal system derives from BoC-I_1 rather than BoC-I_2.

Another example from Graves (1955), concerns the Hellenic practice of cementing a cultural blend via the marriage of Hellenic chieftains to local priestesses. On this subject Graves (1955) notes the following: *"All early myths about the gods' seduction of nymphs refer apparently to marriages between Hellenic chieftains and local Moon-priestesses; bitterly opposed by Hera, which means by conservative religious feeling"*. Here we see an inference path that begins in a BoM and moves outward to the enclosing BoC. The fact that Hera opposes the godly seduction of nymphs is mapped, via the metaphoric relationships linking the BoM and BoC, back to the cultural level, via the mappings *Hera → Pre-Hellenic Religion, Seduction → Forced-Marriage* and *Nymph → Pre-Hellenic Priestess* (these are frequent mappings in Greek mythology and are used throughout Graves' analysis). Hera's negative disposition toward the seductions suggests that they occurred despite the established religious practices of those who worshipped the Goddess.

6. Strategies of Compromise

When a compromise is made, it is the party with the greatest ability to dictate terms that usually concedes the least ground. In cultural blends where one party clearly dominates, its beliefs, values, deities and myths will likewise tend to dominate the structure of the resulting blend. But short of completely and utterly suppressing the minor cultural parties in the integration, concessions will be made to these parties, by allowing elements of their mythologies to survive. These elements may hint at a social system that no longer exists, as long as they do not seriously undermine the social system of the dominant faction. Graves (1955) describes classic Greek mythology as the result of precisely this kind of accommodation:

> "Achaean invasions of the thirteenth century BC seriously weakened the matrilinear tradition. ...The familiar Olympian system was then agreed upon as a compromise between Hellenic and pre-Hellenic views: A divine family of six gods and six goddesses, headed by the co-sovereigns Zeus and Hera and forming a Council of Gods in Babylonian style" (Graves, 1995).

Graves' choice of language here suggests that the compromise was an immediate accommodation of perspectives, rather like an executive business decision, and that the Olympian system was the product of a master design rather than a cultural evolution. The truth of the matter is, of course, that the system developed over many years (as Graves notes in great detail), and what we conveniently think of as a conscious agreement was actually the result of cultural harmonization, in which new myths gradually developed to explain why a certain mix of deities were still worshipped, why certain rituals were still performed, and why certain social responsibilities and powers had shifted hands.

In would thus stretch the point to consider the role of compromise in myth formation as strategic in any deliberate sense. Though some ancient authorities has exerted more influence than others in the course of mythological interpretation, in most cases no single controlling influence is exerted by a specific cognitive agent with particular goals. Nonetheless, one can still evaluate the post-hoc success of the compromises that have produced the most dominant myths, and derive from this evaluation a set of deliberate strategies that a future agent might find profitable to consider in an environment where 'mind-share' is competitively sought. When one looks to Greek mythology with an eye for the most strategic compromises, the following conceptual operations seem to be the most productive.

6.1. Fragmentation

This strategy causes a deity to be split into several distinct sub-deities, so that the unifying relationship amongst them is obfuscated in the blend, or simply not projected at all. This can be seen as a 'divide and conquer' strategy on the part of the dominant culture. For instance, the fragmentation of the Great Goddess occurred along the relatively sharp conceptual boundaries that defined her various aspects of divinity, creating distinct deities that were more dissimilar than they were similar.

6.2. Renaming

This strategy compounds the work of fragmentation, by assigning new names to the fragmented entities of the blend, to further obfuscate the relation of these splinter entities to the original deity of the input. For example, the pre-Hellenic Goddess has many names in classical mythology (e.g., *Athene = Maiden/Youth, Hera = Motherhood, Persephone = Fertility, Athene = Wisdom, Aphrodite = Sex*). These splinter entities then become associated with individual characteristics of the original deity (such as Wisdom or Love), to the extent that they can more readily serve as universal ciphers or proxies for those characteristics (e.g., Aphrodite becomes the embodiment of beauty and love). Used in combination, fragmentation and renaming yield a powerful means of stripping a deity of its inherent complexity and making it more malleable (or reusable) for mythic purposes.

6.3. Identification and Amalgamation

This strategy causes a deity to be identified with another deity from another input space. The extent of the compromise is determined by the semantic fit of each deity to the other, as well as the relative social status of each deity within their respective belief systems. For instance, in the Medusa myth the mortal Perseus is an amalgam of a archetypal Greek hero and the Hellenic god Hermes in his destroyer (or 'Pterseus') aspect (see Graves, 1955). This accounts for his use of the winged sandals that are emblematic of Hermes as a messenger of the gods. Similarly, another aspect of Hermes as a keeper of alchemical secrets (and the sense from which the words 'hermetic' and 'hermeneutic' are derived), known as 'Hermes Trismegistus' or 'Hermes Thrice Greatest', seems to be an amalgam of the Greek messenger god and Thoth, the Egyptian god of Intelligence.

6.4.Demotion

A deity is placed into a *master:servant* relationship with another deity from another space. This relationship might be that of *parent:child* or *husband:wife*. For example, the goddess Athene is demoted by virtue of becoming Zeus's loyal daughter. Another example is that of Hera, a name that probably means 'lady' and which also referred to the pre-Hellenic Great Goddess. Hera represents a matriarchal culture in which the priestesses of the Goddess wield social power and resist marriage to avoid having this power usurped. However, Hera becomes part of the Olympian system when Hellenes begin to force marriage upon priestesses of various cults in order to gain control over the rituals and offices in which social power is vested. From these forced marriages develops the myth that Hera herself is both Zeus's wife and sister (since incestuous marriage is allowed between these early *proto*-gods). Similarly, there is good reason to believe that that Medusa is simply a monstrous demotion of the pre-Hellenic Great Goddess, who priestesses wore Gorgon masks to frighten off the uninitiated.

6.5. Semantic Shift

This strategy causes a deity to be projected into the blend space with a different set of associated powers, symbols or background myths, in order to great a better fit with the dominant mythology. For example, once Hera has been assimilated as the wife of Zeus, she becomes seen as a champion of marriage and a defender of marital fidelity. Since her own marriage is for the most part a forced one to the philandering and deceptive Zeus, this is an unusual conceptual position for her to occupy. Semantic shift is here used to accommodate Hera to her newly demoted position as Zeus's wife.

6.6. Reversal or Subversion

Reversal is a subversive strategy that causes the role structure of a mythic narrative to be inverted, so that the antagonist becomes the protagonist, and vice versa. For example, classical Greek mythology is replete with seduction stories of deities (frequently Zeus in animal guise) aggressively chasing down nymphs, but Graves (1955) suggests that this classical account is in fact a subversion of the pre-Hellenic ritual in which the priestesses of the Moon Goddess pursued the 'sacred king' in the murderous ritual that marked the end of his reign. In earliest times the king was actually killed in this ritual, but the act became increasingly symbolic over time as society became more patriarchal, first through the use of sacrificial surrogates, and later through the use of ritual metaphors, eventually culminating in the reversal of the roles of priestess and king as these rituals became myth.

7. Conclusions: The Agent Perspective

Myths provide a excellent basis for study the dynamics of competition and compromise in multi-agent blends. Different societies and peoples combine their belief systems, rituals and social practices in a competitive (if not always overtly aggressive or militaristic) clash of cultures that shapes both the resulting blended culture and the associated blended belief space of this new culture. Each party makes compromises in their attempt to preserve their core values and beliefs. The effect of these compromises is as one might predict from conceptual integration theory: the emergence of a new, blended mythology with an internal logic of its own, a conceptual system whose roots can be traced back to the cultural and mythological elements that combined to create it, but one that is free to grow in its own way.

We believe that the analysis of mythology is worthwhile not only for its own sake, but as a means of understanding how two agents with differing cultures and world-views can reach an accommodation over time. This understanding is of direct relevance to the domain of software agents, for as software agents grow in complexity and ambition, they increasingly rely on evermore sophisticated models of the external world (see Veale, 1999). The richness of these models, combined with the inherent metaphoricity of different domains of knowledge, can mean that different agents construe the world in dissimilar, and often incompatible, ways. This is problematic precisely because the promise of agent systems lies in the possibility of autonomous inter-agent interaction for negotiation and task-sharing. Conceptual integration offers a computationally tractable framework in which to explore this promise (see Veale and O'Donoghue, 2000 for a discussion of tractability in the context of blending). Before software agents can interact effectively, their world views must be consistently integrated in a way that recognizes and resolves the inherent tensions between each. For without this integration, agents can have no mutual agreement about how resources of common interest should be valued. Conceptual integration theory provides a powerful framework in which to recognize and resolve these tensions, while an understanding of the integrative basis of mythology reveals how this resolution can effectively occur when entire populations or societies of agents are involved.

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Conceptualizing Metaphors and Similes

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Abstract

Conceptual blending theory offers a forceful account of the conceptual structure that metaphors and analogies evoke. However, the theory does not accommodate recent findings that demonstrate that similes and metaphors generate different conceptual representations. Specifically, recent findings show that: (a) metaphors evoke representations that contain more 'emergent' properties, whereas those evoked by similes are less emergent; retaining discrete properties of the source and target spaces, and (b) the psychological similarity of the source and target spaces is enhanced to a greater extent by metaphors than by similes. The paper presents these findings and outlines a model of blending that accommodates them. This model extends current formulations of blending in metaphors (cf. Coulson, 2001) by positing the existence of an input space which corresponds to the grammatical form of the utterance (i.e., ISA vs. IS-LIKE). According to this model, different types of information are selected as input on the basis of the grammatical form that is used. This research demonstrates that a complete theory of metaphor should take into account the linguistic form of the utterance.

One of the main goals of the study of language is to elucidate the connections between the grammatical form of linguistic utterances and the cognitive representation they construct upon comprehension. Such research has made evident that language affords making distinctions that are finer than those needed for describing states of affairs (Langacker, 1999), and that particular grammatical constructions are strongly related to specific sentence meanings (Goldberg, 1996, see Kaschak & Glenberg, 2000 for empirical evidence). By and large, such conclusions have been drawn on the analysis of non-figurative forms of language. In contrast, the prevailing view with respect to figurative tropes is that grammatical form plays a minor role in the construction of their meaning.

In this paper I address the relation between two forms of figurative expressions: nominal metaphors and similes. Given the demonstrated relation between the grammatical form of literal utterances and their cognitive representation, it is essential to examine whether grammatical constructions also affect the meaning of more figurative expressions. Similes (e.g.: This lawyer is like a shark) and metaphors (e.g., This lawyer is a shark), offer a unique opportunity for examining this issue. The two forms differ grammatically only in the presence of the relational indicator like; while metaphors have the form of class-inclusion statements, similes have the form of comparison statements[i].

Before addressing the question of the mental representation constructed by the two tropes, it is important to note that this topic has often been treated as a non-issue. The reasons for this stance derive from some diverse views of the nature of metaphor, and of metaphoric comprehension. For instance, Lakoff (1993) contends that "the locus of metaphor is not in language at all, but in the way we conceptualize one mental domain in terms of another". According to this view, metaphorical utterances are merely realizations, or extensions of cross-domain mappings, and acquire their meanings as such. From this viewpoint, it is difficult to argue for any difference between metaphors and similes, since both are based on the same cross-domain relation. The traditional (three-stage) approach to the comprehension of metaphorical utterances also argues for the relative unimportance of grammatical form. According to this approach, metaphor comprehension consists of three stages: construction of literal meaning, test (and rejection) of the literal meaning, and construction of a relevant meaning. Searle (1993) summarizes this view, claiming that metaphors and similes do not represent the meaning that the speaker intends to convey, and do not commit the speaker to the literal truth of the statement. Consequently, the addressee's task upon hearing a metaphor or a simile is to construct the intended speaker's meaning from the *defective* sentence meaning. Given the mutual defectiveness of metaphors and similes, the grammatical difference between them should not translate into a systematic conceptual difference. Finally, some researchers have claimed that metaphorical utterances and similes are forms of 'loose speech' (Wilson & Sperber, in-press; Chiappe & Kennedy, 2001). According to such views, comprehension of these figurative tropes is based primarily on the semantic features of the topic and the vehicle of the metaphorical utterance.

From the perspective of blending theory (BT), the notion that metaphors and similes will generate different representations is an issue. Given that they differ syntactically, they are predicted to construct different conceptual representations. While a number of previous studies have examined possible relations between metaphors and similes, none have shown that the two differ with respect to their mental representation. The manuscript consists of three sections: The first presents current views on the issue of metaphor and similes. The second section focuses on recent data that specifically address the issue of mental representation, and the third section outlines a BT account that is consistent with these recent data.

1. Relating metaphors and similes

Three theoretical views that have been suggested to account for the relation between metaphors and similes: (a) Both tropes are understood as comparison statements, (b) Both tropes are understood as categorization (or class-inclusion) statements, (c) The tropes are different, though some commonalities between them may exist.

1.1. Metaphors and similes are both understood as comparison statements

The most longstanding theory of metaphor comprehension contends that both metaphors and similes are just comparison statements. This 'comparison' view, which originates in Aristotle (trans. 1946, see

Bethlehem, 1996 for a review), claims in its strongest form that metaphors are elliptical similes. Modern proponents of this view (Ortony, 1993; Miller, 1993) adopt a weaker version of this claim. While maintaining the notion that comparison is an important and integral part of metaphor comprehension, such theorists have also attempted to specify in what ways metaphors diverge from comparison statements. For instance, Miller agrees with the claim that "reconstruction of the implied comparison is a critical step in understanding a metaphor", but notes that "the comparison statement cannot be taken as the meaning of the metaphor".

Some empirical findings appear to be consistent with the comparison view. Chiappe and Kennedy (2000) assessed comprehension of metaphors and similes in an empirical study, evaluating the strength of statements which were presented in either metaphor or simile form. Participants evaluated measures such as strength of speaker's attitude and the number of properties attributed to topic. On these measures, no major differences were found between metaphors and similes. Chiappe and Kennedy took these findings to support the original comparison view, according to which metaphors are elliptical similes and therefore convey similar meanings.

1.2. Metaphors and similes are both understood as class-inclusion statements

In opposition to the 'comparison' view, some researchers have contended that metaphors are comprehended as class inclusion statements (Glucksberg, 1997; Glucksberg, 1990; Kittay, 1982). An extension of this view is that similes are also comprehended as class-inclusion statements. For instance, Glucksberg & Keysar (1990) maintained that similes (or in their terms, metaphorical comparisons) are more similar to metaphors than to literal comparisons. A simile (e.g.: Cigarettes are like time-bombs) can be paraphrased as a class inclusion statement (i.e., Cigarettes are time-bombs), while literal comparison statements (e.g.: Harpsichords are like pianos) can not be paraphrased as such. Furthermore, comparison statements can be reversed without changing major aspects of their meaning, but similes can not be reversed without causing major changes to their meaning. Such instances were taken by Glucksberg & Keysar (1990) to suggest that similes may be understood as class inclusion statements. Some empirical research seems to corroborate aspects of this view: it has been demonstrated that both similes and metaphors change their meaning when reversed. In fact, similes were found to be as non-reversible as metaphors (Glucksberg, McGlone & Manfredi, 1997).

1.3. Metaphors and similes are different (at least at times)

As opposed to the comparison and class-inclusion view, other research indicates that the two forms are not always equivalent. Gibbs (1994: 217) argues that "converting a metaphor into a simile does not always produce an intuitively correct paraphrase", indicating that "metaphors are not necessarily understood as implicit similes". Indeed, in psychological studies, participants find similes to appear as more literally true than metaphors (Gregory & Mergler, 1990). Other research had demonstrated that comprehension times for metaphors and similes are not equivalent. Such latency data has been used to argue for both the equivalence (Johnson, 1996) and non-equivalence (Gentner & Bowdle, 2001) of the tropes.

A different line of research evaluates the communicative functions that may be achieved by metaphors and similes. Roberts and Kreuz (1994) found that participants rated metaphors and similes as achieving different communicative goals. These intuitions were supported by empirical findings, which demonstrated that the choice between using a metaphor and a simile is not an arbitrary one: First, it was found that quite often, there is a strong consensus as to whether a comparison is best expressed in the form of a metaphor or a simile (Chiappe & Kennedy, 1999). Second, it was found that certain parameters affect such preferences; increased aptness (Chiappe & Kennedy, 1999), higher topic-vehicle similarity (Chiappe & Kennedy 2001), and higher abstractness of the vehicle term (Gibb & Wales 1990) were found to be correlated with preference for metaphor form over simile form.

Gentner and Bowdle (2001) offer a diachronic explanation to the relation between metaphors and similes. According to this explanation, metaphors and similes are both understood as comparison statements, but only in those cases where the vehicle has not yet acquired a lexicalized, 'metaphorical' meaning. Gentner and Bowdle report a number of experimental findings that corroborate this approach.

2. Evaluating the comprehension of metaphor and similes

The body of research reviewed so far suggests that metaphors and similes might differ in various aspects. However, these studies did not directly evaluate whether the tropes are actually comprehended differently *by the listener*. Most importantly, those studies that has used various measures to evaluate the mental representation evoked in the listener (Chiappe & Kennedy, 2000, 2001) did not find differences between the tropes.

My colleagues and I and have recently investigated the issue by employing two empirical methods: (a) we assessed whether metaphors and similes equally affect between-domain similarity and (b) assessed whether metaphors and similes activate different features of the topic and the vehicle.

2.1. Metaphors, similes and topic-vehicle similarity

Our initial investigation of the representations constructed from metaphors and similes relies on an implicit measure: a judgment evaluating topic-vehicle similarity which was made after reading statements in either metaphor or simile form. The logic behind the method is straightforward:

comprehension of metaphors and similes should result in the activation of certain features of the topic and vehicle. Those features activated in the context of the sentence will then affect the perceived similarity between the terms.

2.1.1. Theoretical predictions regarding similarity ratings

Tversky's 'contrast model' of similarity (Tversky, 1977) conveniently demonstrates the logic behind the pattern of results expected if metaphors and similes do indeed generate different mental representations[ii]. According to the contrast model, the similarity of two entities is determined by a function that takes into account their common and distinctive features.

1) $S(a,b) = \square\, f(a \,\square\, b) - \alpha f(a - b) - \beta f(b - a)$

In this equation, a and b represent the features of the entities being compared, and $\square$, α and β represent the importance of the various components. It can be seen that similarity increases the more shared features there are, and decreases the more distinctive features there are. The first prediction thus arises directly from the model: if the meanings of metaphors and similes are different, then different features of the topic and the vehicle will be activated after reading the tropes. As a consequence, the perceived similarity between the topic and the vehicle should differ depending on the type of statement that was read before making the similarity judgment.

Two additional predictions are derived from an interesting property of psychological similarity -- that similarity judgments between entities are not symmetrical. For instance, Tversky and his colleagues (Tversky, 1977; Tversky & Gati, 1978) found that the similarity of North Korea to China was judged as being greater than the similarity of China to North Korea.

Such asymmetries were also found in other domains such as self-other similarity (Markus & Kitayama, 1991; Satterwhite, Feldman, Catrambone, & Dai, 2000), similarity of non-prototypes to prototypes (Rosch, 1975), and similarity between systematic and non-systematic textual segments (Bowdle & Gentner, 1997). Roughly summarized, such research has demonstrated that the similarity of the less-salient entity to the more-salient entity is perceived as being stronger than that found when the comparison is reversed.

Given that metaphorical vehicles may be understood as prototypes of abstract categories (Gentner & Bowdle, 2001; Glucksberg & Keysar's 1990), it is possible that the similarity of the topic to the vehicle will be judged as stronger than the similarity of the vehicle to the topic. However, it is unclear whether this is also the case for similes. Similes may be understood as comparisons, and thus, any such asymmetry may be smaller, if existent at all.

2.1.2 Method and results

Thirty-two comparison statements were chosen from the research literature, and presented to participants so that each participants saw all statements in either metaphor or simile form. After reading each of the statements, participants (N=128) rated the following: (a) how familiar they were with the statement, (b) how easy it was to comprehend, and (c) the similarity between the topic and the vehicle. Important, half of the participants rated the similarity of the topic to the vehicle, and half rated the similarity of the vehicle to the topic. This yielded a 2 x 2 between-Ss design: sentence Form (metaphor vs. simile) by topic-vehicle judgment Direction (topic-vehicle vs. vehicle-topic). For example, the comparison statement with My lawyer as the topic and shark as the vehicle appeared in either metaphor (is a) or simile (like) form, and participants rated the similarity of either topic to vehicle (how similar are lawyers to sharks) or vehicle to topic (how similar are sharks to lawyers). Any given participant saw only one form of the statement, and always rated either the similarity of topic to vehicle, or vehicle to topic. The similarity ratings for similes and metaphors for both judgment directions are presented in Table 1.

Table 1: Mean Similarity Ratings (and Standard Error) as a Function of Statement From and Judgment Direction

Direction	Metaphor	Simile
Topic-Vehicle	2.94 (.14)	2.57 (.17)
Vehicle-Topic	2.49 (.15)	2.35 (.14)

The average similarity ratings from the four conditions were entered into a two-way (Form X Direction) ANOVA with subjects and items as random variables. An alpha level of .05 was used in this and all following statistical tests. Similarity ratings following metaphors were higher than those following similes ($M = 2.71$ vs. $M = 2.52$). This effect was statistically significant by items $F_i(1,31) = 35$, $p < .001$, and marginal by subjects $F_s(1,121) = 3.53$, $p = .06$. Participants also rated topic-vehicle similarity as greater than the vehicle-topic similarity ($M = 2.78$ vs. $M =$

2.45). This effect was statistically significant by items $F_i(1,31) = 51$, $p < .001$ and by subjects $F_s(1,121) = 3.84$, $p < .05$. However, the asymmetry between the judgment directions was larger for metaphors than for similes; the Order X Form interaction, was statistically significant by items $F_i(1,31) = 7.7$, $p < .01$, but not by subjects (F < 1).

Two main phenomena are revealed in this analysis. First, metaphors resulted in higher perceived similarity than similes. Secondly, for both metaphors and similes, topic-vehicle similarity was higher than vehicle-topic similarity. Furthermore, there was an indication an Order X Form interaction, which reflected the larger asymmetry found for metaphors. These results indicate that the conceptualization evoked by metaphors and similes does differ.. Notwithstanding, though the similarity measure demonstrates that an important difference exists between metaphors and similes, it is not possible tell from this study what factors are responsible for the different similarity ratings, since the method does not assess the actual content of mental representation. To better investigate the topic we used an immediate paraphrase task to examine peoples' understanding of metaphors and similes.

2.2 Literal and emergent properties in metaphors and similes

One possible factor that may be implicated in the differences between the tropes relates to the status of the vehicle term. Literal comparisons are only meaningful when they compare between entities that are of the same level of abstraction. For instance, it is meaningful to compare between *dogs* and *cats*, since both are basic-level entities. Given that similes have the form of literal comparisons, similes may convey that the vehicle is to be understood as a basic-level entity. Metaphors however, are based on the form of class-inclusion statements -- statements that relate between entities on different levels of abstraction. Metaphors, then, may convey that the vehicle is to be understood as not being on a basic-level of abstraction, thereby prompting the construction of more elaborate and emergent representations (cf Becker, 1997; Gineste & Indurkhya, 2000).

It is therefore possible that literal properties of the vehicle would be more salient after reading similes than after reading metaphors. Correspondingly, metaphors should generate more non-literal (or emergent) properties. These hypotheses were evaluated in Experiment 2, which assessed comprehension of metaphors and similes using an immediate paraphrase task.

2.2.1 Method and results

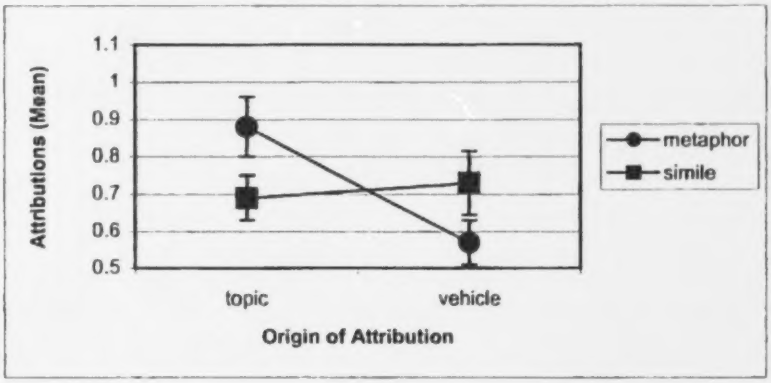
Sixteen items were randomly selected from the thirty-two that were used in Experiment 1. Two lists were constructed: one in which all the items were in metaphor form, the other in which they were all in simile form. Participants (N=16) were randomly assigned to either the simile or metaphor condition. The materials were presented one item at a time on a computer screen. Participants were instructed to read each item and to provide one or two sentence paraphrases of each one by typing their interpretations -- i.e., what the expression meant to them. Participants' responses were collected and stored so that they could be coded blindly. The paraphrases were read to determine the types of predications, or attributions, that were made in them. Below is an example of participants' paraphrases for the theme ideas are [like] diamonds. Sentences A-D were given in response to the simile form, and sentences E-G were given in response to the metaphor form:

a) Some ideas are rare and desirable.
b) Some ideas are so interesting it is as though they shine and glitter.
c) Sometimes you have excellent ideas, but they are rare and special.
d) Some ideas are very valuable
e) Some ideas are really incredible -- but often rare.
f) Some ideas are brilliant and insightful.
g) Some ideas are fantastic, and creatively very unique.

The attributions were classified as referring to literal properties of the vehicle (vehicle-related attributions) or to those properties of the topic that are instantiated in the context of the metaphor (topic-related attributions). For example, descriptions attributing rareness, desirability, shine and glitter were categorized as vehicle-related properties, while attributions such as 'incredible', 'insightful' and 'creatively-unique' were categorized as properties that were ascribed to the topic in the context of a metaphor. This classification was done by the author, who was blind to the paraphrasing condition.

The main point of interest was to see whether reading a theme in either metaphor or simile form would result in different proportions of topic- and vehicle-related attributions. The average mention of topic- and vehicle-related properties is presented in Figure 1.

Figure 1: Mean number of topic and vehicle attributions (and Standard Error bars) for metaphors and similes in Experiment 2



As expected, more topic-related properties were mentioned in metaphor interpretations ($M = 0.89$) than in simile interpretations ($M = 0.69$). This difference was significant by items $t_{\mathrm{I}}(15) = 2.3$, $p < .05$ and marginal by subjects $t_{\mathrm{S}}(14) = 1.99$, $p = .06$. Also, more vehicle-related properties were mentioned for similes ($M = 0.73$) than for metaphors ($M = 0.57$). This difference was significant by items $t_{\mathrm{I}}(15) = 2.3$, $p < .05$, but not by subjects, $t_{\mathrm{S}}(14) = 1.2$, $p = .20$.

We then evaluated the relative proportion of vehicle- and topic-related properties within each of the forms. For metaphors, the mean number of topic-related properties mentioned was 0.89, compared with a mean of only 0.57 for vehicle-properties. This difference was reliable with both items and subjects as random variables, $t_{i}(30) = 2.92$,

$p < .01$, $t_s(16) = 2.62$, $p < .05$, respectively. In contrast, no reliable difference was found for similes ($M = 0.69$ and 0.73, respectively).

The results demonstrate that elaborated, or emergent features related to the topic were more salient after metaphors than after similes. In contrast, there was evidence that literal properties of the vehicle were somewhat more prominent after similes than after metaphors.

3. Conclusions: towards a blending model of metaphor and similes

The strong view of metaphor comprehension claims that metaphors are elliptical similes, which lack the grammatical marker ‘like’. As such, it discards the role that grammar plays in the comprehension of metaphors and similes. Contrary to this view, the present results demonstrate the importance of grammar: specifically, the grammatical marker serves to specify the vehicle’s level of abstraction. In metaphors, the vehicle is understood as referring to a more abstract level of representation, while in similes the vehicle is understood as being on the same level of abstraction as the topic. This conclusion is supported by both the similarity judgments and by the predication patterns found in the paraphrasing study. The findings convey an important general implication: though one of the goals of cognitive research is to delineate common cognitive processes, such a tendency might lead us to ignore important conceptual differences. This tendency is also evident in the claim that the conceptualization of noun-noun combinations such as mirror-lake is similar to that of the corresponding metaphorical forms (see Estes & Glucksberg, 2000; Goldvarg & Glucksberg, 1998; Wisniewski, 1997). The present results indicate that a complete examination of such forms should take into account possible differences between them and similar forms.

Blending theory is unique in that it provides a comprehensive theoretical apparatus that can be used to both predict and explain the different conceptual structures prompted by metaphors, similes and noun-

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noun combinations. First, it makes a distinction between analogy relations and class-inclusion relations and, contradictory to other theories of metaphor comprehension, argues that both may be used in the construction of online meaning (Fauconnier & Turner, 2002: 98-100, 274). The theory also supports the idea that analogy relations may be compacted into categorization relations.

Second, the theory argues that abstract schemes, which correspond to grammatical forms, are a type of conventionalized input space that carries independent semantics (e.g., the XYZ construction; ibid.: 154-159, or the Ditransitive construction; Turner & Fauconnier, 1999.) Furthermore, the specific meaning instantiated for a word derives from the word's role in a specific grammatical construction. Examples for this are abundant. Fauconnier and Turner (2002: 141-143) argue for example, that the meaning instantiated for the word 'father' in various sentential contexts depends on the specific role it may play in different blends, and that these meanings lie on a continuum between the literal and the metaphorical. Coulson and Matlock (2001) present empirical data consistent with these claims. They demonstrate that there exists a continuum of mappings between the literal and the metaphorical, and that a specific word will be instantiated in different senses in each of these contexts. For example, participants listed more unique features when words were embedded in metaphorical contexts (e.g., his wife was his *anchor*) than when they were embedded in a quasi-literal context (e.g., we were able to use a barbell for an *anchor*). This finding is completely consistent with the findings regarding metaphors and similes. The quasi-literal context can be seen as setting up a similarity relation in a manner similar to that of similes, while the metaphorical mapping is reminiscent of categorization.

I suggest that the grammatical form of metaphors and similes can be understood as an independent input space, in which the role of the topic and the vehicle is specified in an abstract, schema-like manner. It is in this space in which the vehicle's level of abstraction is specified. The constraints specified in this 'grammatical' space interact with the properties instantiated in the topic and the vehicle input-spaces to provide the basis for meaning construction. It is unclear however whether this process is serial or parallel.

Finally, in contrast to the 'comparison' view, BT accounts for, and explains the construction of emergent features; those properties that are not part of either the topic or the vehicle (see Grady, Oakley & Coulson, 1997). However, it is still unclear what is the status of the unmapped, or irrelevant, elements -- are they unattended to, or actually suppressed? Grady et al. note that in 'metaphorical fusion', salient properties of the input domain are overridden in the blend, and that selective projection might be implemented by inhibition processes. This has been empirically demonstrated for metaphors (Gernsbacher et al., 2001; Glucksberg et al., 2001), but it remains to be seen whether suppression processes are differentially implicated in the comprehension of metaphors, similes and noun-noun combination.

4. Summary

I have attempted to show why the role of grammatical form in figurative language should not be taken as a non-issue. The studies provide converging evidence that metaphors and similes do construct different representation. Finally, I have presented an outline, which is consistent with blending theory, and which can account for such differences. Blending theory is clearly an extremely useful source of hypotheses for psychological investigation, and further research should investigate the predictions that it affords.

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[i] For purposes of convention, I will refer to the first noun as the *topic* of the comparison and to the second noun as the *vehicle* of the comparison.

[ii] While the model offers a convenient way to describe the rational behind the predictions, other models of similarity, which are not based on feature-based representation would serve as well.

Blending in Japanese Conjunctive Particle

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Abstract

This study deals with Japanese conjunctive particle *sobakara* which has both spatial and temporal meanings and compares recent studies of conceptual metaphor such as Grady (1997) and Moore (2000) with the theory of blending proposed by Fauconnier and Turner (1998) and Coulson (2001) for their capability to explain these particles.

While this conjunctive particle is originally a compounded phrase of noun and particle with spatial meaning, it can also indicate temporal relation. Thus the particle can be an example of metaphor which maps from the source domain of space into the target domain of time. In this sense, the conjunctive particles in Japanese can be explained within the framework of conceptual metaphor.

However, this study reveals that these particles have also certain 'emergent' meaning such as adversativity, which appears to come from the relation between spatial meaning and temporal meaning; that is, 'blending' of the two domains.

Thus this study proposes that (i) the approach of blending is effective in the analysis of the Japanese conjunctive particles and (ii) in order to develop the theory of blending it should have the capability to explain not only 'on-line metaphorical blends' but also highly grammaticalized elements such as the particles discussed in this paper.

1. Introduction

The main concern of my study is how words with spatial meaning also convey (or is mapped into) temporal meaning in Japanese particles. Some Japanese conjunctive particles have both spatial and temporal meaning while spatial senses are original; e.g. *uchi* (inside), *aida*, *ma* (between), *suki* (narrow space) *mae* (before / front), *ato* (after) *soba* (near), *atari* (around), *katawara* (side) and so on. This paper picks up one conjunctive particle *sobakara* that consists of noun *soba* (near place) and ablative *kara* (from) as in (1) and (2); (1) has spatial meaning and connection of the two constituents (*soba* and *kara*) is weak, while (2) has temporal and also adversative meaning;

1 John-no **soba-kara** Mary-ga satteitta.
John-gen side-from Mary-nom leave-past
Mary left from the side of John.

2 Chuui-suru **soba-kara** Taro-wa machigae-ta
caution-do beside-from Taro-topic mistake-past
As soon as / though I gave an advise, Taro made a mistake.

This paper discusses how its meaning extends from original spatial meaning and in order to explain the extension not only conceptual metaphor but blending theory seems effective. Section 2 explains the basic meaning of each constituent and compounded *sobakara*. Section 3 discusses how the theory of conceptual metaphor explains this expression. Section 4 reveals that *sobakara* has an adversative sense. Section 5 suggests the analysis of blending theory can explain emergent meaning of adversativity in *sobakara* and section 6 concludes this paper.

2.1 *soba*

This section overviews basic characteristics of the elements discussed in this paper; *soba*, *kara*, and their combination *sobakara*. Let us begin with *soba*. *Soba* is originally a noun that means a near place, side. Since it is a noun, it can be attached by several postposition like *de* or *ni*.

3 boku-no ie-no **soba**-de kaji-ga atta.
my house-gen near-place-loc fire-nom take-place-past
There is fire near my house.

4 itsumo **soba**-ni ite hoshii
always near-place-loc stay want
(I) want (you) to stay beside me.

These examples show *soba* denotes spatial adjacency (near-ness).

2.2 *Kara*

Kara is an ablative and, according to Keiser et al. (2001), marks the point of origin or departure of the action of verb. It is mostly attached to noun of time or space, or other noun that can be used with the idea of 'from … to ….' (5) shows spatial sense. (6) is an example of temporal usage and means that he started soccer in the 5th grade and imply that he continues to play soccer from that moment for a while or still does so now.

5 london **kara** pari made
London from Paris to
From London to Paris

6 shougakkou go-nen **kara** soccer-o hajime-ta
elementary-school five-year from soccer-acc begin-past
He started soccer in year 5 of primary school.

It should be noted that *kara* 'from' means starting point of action, so a certain movement (literally or metaphorically) is implied. But the direction of movement cannot be determined only by *kara*.

Incidentally, *soba* itself also has the function of conjunctive particle, but it does not have spatial nor temporal meaning, but shows reason. In (7), 'clause 1 *kara* clause2' means 'Because clause 1, clause 2.'

7 yasuk-atta **kara** takusan ure-ta
cheap-past because a-lot sell-past
Because they were cheap, they sold a lot.

2.3 *sobakara*

Let us see what happens when *soba* and *kara* are combined. Sentences 8 and 9 show the use of spatial meaning.

8 John-no **soba-kara** Mary-ga satteitta.
John-gen side-from Mary-nom leave-past
Mary left from the side of John.

9 John-no **soba-kara** Mary-ga toujou-shita
John-gen side-from Mary-nom appear-past
Mary appeared near John.

Here, *soba* keeps having the status of content word and shows spatial adjacency. It can be said that *sobakara* is noun plus ablative at this stage.

As the next step, *sobakara* comes to be a conjunctive particle and has temporal meaning; 'clause 1 *sobakara* clause 2' means 'as soon as clause 1, clause2' as in (10).

10 keganin-ga hakobikom-areru **sobakara** chiryou-shita
injured-person-nom carry-passive side-from treat-past
As soon as the injured were carried (into hospital), (a doctor) treat them.

11 chuui-suru **sobakara** machigaeta
warn side-from mistake-past
As soon as (one) warns (not to make a mistake), (the other) made a mistake.

12 youbi-ga kawaru **sobakara** betsuno
day-of-the-week-nom change sude-from another

anaunsaa-ga toujou-shita
newscaster-nom appear-past

As soon as a day of the week turned into another, another newscaster appeared (on the TV screen).

3. Analysis with conceptual metaphor

As (11) and (12) show, it can be said that *sobakara* can have temporal meaning, while its original meaning of noun *soba* and ablative *kara* is spatial one. To explain such an extension of meaning from space to time, it has been widely discussed that metaphor plays a crucial role. With a conceptual metaphor TIME AS SPACE, we can say that the noun which shows spatial adjacency can also show temporal adjacency; that is, two events occur one after another. In such mapping image schema of the source domain should be preserved according to the Invariance Principle.

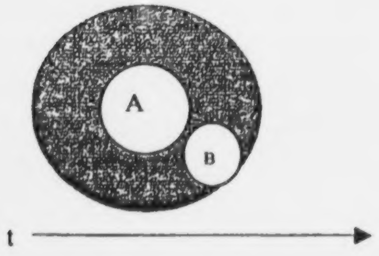

Figure 1. Proximity/adjacency image schema (B is near A)

Figure 1 is a rough sketch of image schema of *soba* or adjacency/-proximity. A and B are proximate or adjacent, though two entities do not necessarily touch each other and the same thing can be said in *soba* in Japanese. The gray area around A is regarded as the area adjacent to A and the outside of gray area not as being adjacent to A. Since entity B is in this area, A and B are adjacent, near, or close. According to the Invariance Principle, such a schema should be preserved in the target domain of time. Event A happens at a certain point or range on axis of time, and event B follows immediately after A. Thus, we can explain the extension of meaning with conceptual metaphor here.

However, one issue arises. That is, even if *sobakara* is used to show temporal adjacency, it still seems to have some spatial implication.

13 *Nihon-ga toruko-ni maketa **sobakara**
Japan-nom Turkey-dat. loose-past side-from

Kankoku-ga itaria-ni katta
Korea-nom Italy-dat. win-past

As soon as Turkey defeated Japan, Korea defeated Italy.

In (13), with the context of World Cup of Soccer this year in which the cohost Japan and Korea have matches of round 16 on the same day but the one match is in Japan and the other in Korea. In such case, we cannot say like (13) in Japanese. So, it seems that adjacency of both space and time is necessary for some use of this conjunctive particle. Why is it?

Thinking about experiential grounding of mapping between space and time, there is a case discussed in Moore (2000) where spatial and temporal events occur at once as in (14).

14 There's trouble ahead.

(14) can have two interpretations; i) there is troublesome situation located on Ego's path ahead of him/her and ii)trouble will occur in Ego's future. Moore (2000:81) mentions that "… the expression has both the spatial and temporal meaning at once. The two meanings are distinct but they pertain to a single understanding of the situation referred to."

We can see the same 'combined simultaneous interpretation' in some examples of *sobakara*. In (10) and (11), it can be interpreted that two events which are connected by *sobakara* are adjacent spatially as well as temporally.

When the spatial and temporal adjacency are required as in (10) and (11), it might be possible to say that there is combined simultaneous interpretation discussed in Moore (2000) and a metaphor involved in the semantic extension of *sobakara* has experiential grounding;

> Experiential grounding
> Metaphors are grounded in experiences that instantiate their Source-Domain and Target-Domain concepts both at once; that is, experiences in which Source-Domain and Target-Domain concepts are saliently and regularly correlated. (Moore 2000: 19-20)

Based on the discussion in the chapter 15 of Lakoff and Johnson (1980), experiential gestalts of *soba* might be as follows;

> Experiential gestalts (cf. Lakoff and Johnson 1980, chapter 15)
>> Grounding scenario of spatial proximity
>> Ego stands at a certain point of a space. Ego finds some entity within a region which is approximate to him/her.
>> Target-Domain scenario of temporal proximity
>> Two events happen at the same time / one after another.

In this way, it seems possible to stipulate experiential gestalts in *sobakara*. However, there is a difference in the requirement of spatial adjacency as in

(10) and (11) versus (12), so it is necessary to see specifically how the meaning of *soba* extends from a prototypical spatial sense.

4. Extension from spatial proximity

As discussed in the previous section, *sobakara* shows spatial and temporal adjacency but there are some uses of *sobakara* where spatial adjacency changes or extends to other relations between clause1 and clause 2 as in (15) – (17).

Mental contact?

15 takai sora-o tori-ga yokogiru **sobakara**
high sky-acc bird-nom pass sude-from

dessan shita
rough drawing do-past

As soon as a bird crossed high up in the sky, (a painter) sketched it.

From concomitance to adversativity/concessivity

16 Chuui-suru **sobakara** Taro-wa machigae-ta
caution-do beside-from Taro-topic mistake-past
As soon as / though I gave an advise, Taro made a mistake.

17 computer-no tsukaikata-o osowaru **sobakara** wasureru
computer-gen use-acc learn side-from forget
As soon as / though I learn how to use a computer, I forget it.

What is important here is that the sense of adjacency remains in those sentences. In (15), even though two events are spatially separated, we can use *sobakara* if a certain mental contact can be established. In (16) and (17), we can see adversative or concessive uses of *sobakara*. Here two events which are contrastive are connected by *sobakara*. Such extension from concomitance (or adjacency here) to adversativity can be seen in English, too as in (18) through (20).

18 Mary stayed inside while it was raining.
19 While I understand what you say, I can't agree with you.
20 Their country has plenty of oil, ours has none.
(19, 20: Longman Dictionary of contemporary English)

(18) shows original temporal meaning while (19) and (20) are examples of adversative meaning. However, as in (21), there is still constraint of temporal concomitance and the event of last year and this year cannot be linked by 'while.'

21 ?While our business was extremely successful last year, this year does not look too promising. (Traugott & König 1991:200)

It might be possible to say that the same thing can be seen in Japanese *sobakara*, too, and from the point of view of grammaticalization, the tendency of semantic change proposed by Traugott and König (1991: 208-9) is applicable to *sobakara*. They propose three tendencies for mapping from concrete sense to abstract sense. Firstly,

> Semantic-pragmatic Tendency I
> Meanings based in the external described situation >
> meanings based in the internal (evaluative/perceptual/cognitive) situation

In this tendency, spatial sense (external, concrete, physical situation) extends to temporal meaning (cognitive, perceptual situation). Secondly,

> Semantic-pragmatic Tendency II
> Meanings based in the described external or internal situation > meanings based in the textual situation

Here, adverb or preposition of spatial or temporal terms develops into sentence connectives. *Sobakara* also appear to change from original noun plus postposition into conjunctive particle which function to connect two clauses. Finally,

> Semantic-pragmatic tendency III
> Meanings tend to become increasingly situated in the speaker's subjective belief-state/attitude toward the situation

'While', temporal connective, comes to express the speakers' surprise at the relation between two propositions through this tendency. It can be said that *sobakara* also comes to have adversative meaning through this tendency.

5. Adversative meaning as emergent structure

As we have seen in the previous sections, *sobakara* appears to have a wide range of meaning; from its original sense of spatial proximity to adversative meaning. As far as spatial and temporal meanings are concerned, the basis of experiential correlation for metaphor can explain the meaning of *sobakara*. Combined simultaneous interpretation appears to be the basis of requirement of not only spatial but temporal adjacency in (10) and (11). However, adversative sense of *sobakara* cannot be explained by the correlation of experience between time and space. As Traugott and König suggest, the semantic tendency can explain the phenomena.

It can be suggested that such an adversative meaning is in emergent structure of the blend in blending theory. Four-space model of blending theory can offer more precise analysis of metaphor as in Kövecses (2002: chapter 16). According to Fauconnier and Turner (1998), blending "operates on two Input mental spaces to yield a third space, the Blend. The blend inherits partial structure from the Input spaces and has emergent structure of its own (p.269)." Thus the analysis of *sobakara* in terms of blending theory appears to have two advantages. First, it can consider the adversative sense of *sobakara* to be the Blend, which is not explicitly expressed in two Inputs of time and space. Secondly, as some examples of *sobakara* has both spatial and temporal sense at once, there might be partial mapping from both Inputs, which cannot be explained by the Invariance Principle and Image-schematic approach of Lakoff, Johnson and so on.

Moreover, from another point of view, since such an adversative meaning does not come from neither *soba* nor *kara* but appears when these two elements are conjoined. Thus it might be possible to postulate two

Inputs of *soba* (proximity) and *kara* (movement from a certain point to unknown direction). When those two inputs are blended, the adversative meaning appears as the emergent structure.

However, one issues arises; as Grady, Oakley and Coulson (1999) point out, "B[lending] T[heory] seeks to model the dynamic evolution of speakers' on-line representations (p.120)." Moreover, Fauconnier and Turner (1998) admits the distinction between basic metaphors and on-line metaphorical blends. Although *sobakara* is a highly entrenched, grammaticalized element, we can understand emergent meaning of *sobakara* through blending theory and it is possible to say that blending theory can explain conventional, entrenched expression such as sobakara.

6. Conclusion

As a conclusion, the mapping from space to time can be seen in Japanese conjunctive particles *sobakara.* With the conceptual metaphoric approach, it seems possible to describe adequately the constraints of the usage of *sobakara*; mapping from original spatial sense to temporal one. However, the adversative sense of *sobakara* does not appear to be attributed to neither the source domain of space and the target domain of time. The emergent structure of blending theory might be able to explain such an extension of meaning. In the future study, detailed analysis of *sobakara* in terms of blending theory is required.

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All papers deal with the topic of the conference: Gilles Fauconnier and Mark Turner's theory of 'conceptual integration' (also known as 'blending'). During the last nine years, blending research has developed from an extension of Fauconnier's mental space theory which was supposed to handle the intricacies and emergent properties of specific things such as counterfactual constructions and metaphors to a vast research programme about what constitutes cognitively modern human beings: about the way we think. Today blending is investigated in a broad range of areas: literature, linguistics, psychology, semiotics, neurology, musicology, social science, art, philosophy, mathematics, anthropology, and film science.

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